The Indians' revenge

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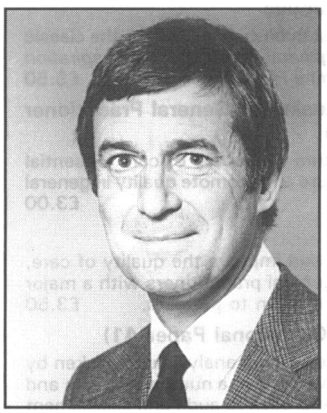

Introduction

I FEEL highly honoured to give this James Mackenzie lecture at the conclusion of the Royal College of General Practitioners' 40th anniversary year and, like my predecessors, have found that one of the pleasures of its preparation has been re-reading the biographies of Sir James Mackenzie[1,2] and a few of his many publications. This man of humble Scottish origins, after many years of general practice in Burnley, became a distinguished London cardiologist before, in his closing years, returning 'north of the border' to establish his Institute for Clinical Research at St Andrews.

He made original contributions to the understanding of irregularities of the heart and angina pectoris (first described by Heberden in 1768).[3] But, along with his contemporaries, he appears to have been unaware of the heart condition which is the commonest cause of death today, coronary thrombosis or myocardial infarction — almost certainly because it was virtually non-existent then. Coronary thrombosis was first clinically described by Herrick in 1912[4] and the regius professor of medicine at Oxford, William Osler, in his Lumleian lectures on angina in 1910, made no mention of this condition.[5] Between 1900 and 1910, deaths in England and Wales attributed to angina pectoris (which may have included coronary thrombosis) averaged less than 1000 per year, compared with a death rate from coronary heart disease of about 170 000 per year in 1990 (The Coronary Prevention Group/British Heart Foundation database).

If coronary heart disease is the epidemic of the 20th century, tobacco smoking must be the epidemic behaviour — the most important cause of preventable death throughout the developed world at the present time and an increasingly important one in the developing world.[6] Richard Peto and colleagues estimate that smoking causes about 150 000 deaths[7] each year in the United Kingdom — more than all the deaths from the scourge of cholera in this country in the 19th century. Currently, about a third of all deaths from cancer and almost a quarter of all deaths from cardiovascular disease, a total of about one in six of all deaths in the UK are due to smoking.[8]

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History of tobacco smoking

Tobacco smoking came to Europe following Christopher Columbus' rediscovery of America 500 years ago.[9] *Nicotiana tabacum* is a plant indigenous to the Americas (Figure 1). American Indians had smoked and chewed its leaves for narcotic, medicinal, religious and social reasons for centuries before the arrival of European explorers. A North American Indian legend tells how the great spirit sent a girl to restore a land ravaged by famine. Potatoes grew where she touched the ground with her right hand, corn where she placed her left hand, and where she sat down grew tobacco.

Sir Walter Raleigh is blamed for introducing tobacco to England and Queen Elizabeth I was quick to realize its revenue potential, introducing the first tobacco tax of two pence a pound. At first, it was regarded as having medicinal value, being described as 'a herb of marvellous virtue against all wounds, ulcers and similar things'. But, in 1604, Elizabeth's successor, King James VI and I, wrote a violent diatribe, *A counterblaste to tobacco,* in which he described it as 'hateful to the nose, harmful to the brain and dangerous to the lungs'.[10] But even he recognized the seductive nature of tobacco smoking and the extraordinary paradoxical effects of nicotine which 'being taken when one goes to bed, makes one sleep soundly and yet being taken when a man is sleepy and drowsy, it will, as they say, awake his brain and quicken his understanding'. So he increased the import duty to six shillings and eight pence a pound.

During the 17th century, consumption of tobacco steadily increased in the UK, it mostly being smoked in pipes but also chewed and used as snuff (especially in fashionable circles where taking snuff replaced smoking). The 19th century saw a growth in the popularity of cigars but it was the development of the cigarette and improved methods for curing tobacco in the latter part of that century which laid the foundations for the huge growth in cigarette smoking worldwide.

The first cigarettes were crude and handrolled but, within a few years, machine-made cigarettes were being produced and the first cigarette factory in England opened in 1856 in Walworth, London. The scene was thus set for what the Royal College of Physicians described in 1971 as 'a holocaust of smoking related disease and premature death'.[11] Although this epidemic is now declining in some developed countries, including the UK, we should remember that worldwide the escalation continues.

Smoking prevalence

The proportion of males in the UK population who smoke reached a peak at the end of the second world war, when almost two thirds of men were smoking.[12] Cigarette smoking among women peaked about 20 years later, in the 1970s, when almost half of all women were smoking.[12] Since then, smoking has been declining in both sexes and most age groups, but the decline has been less steep in women than men and in young women there seems to have been little or no decline, and even an increase, in recent years.[12] The latest reliable national survey, published in 1990, showed that 31% of men and 29% of women were cigarette smokers.[13] The *Health of the nation* has set a target for smoking prevalence of no more than 20% by the year 2000 for both men and women.[14]

An important change in recent years has been the development of a steep social class gradient in smoking prevalence. Until about 1960, smoking was more or less equally common in all social classes.[13] But in 1990, only 16% of professional men and

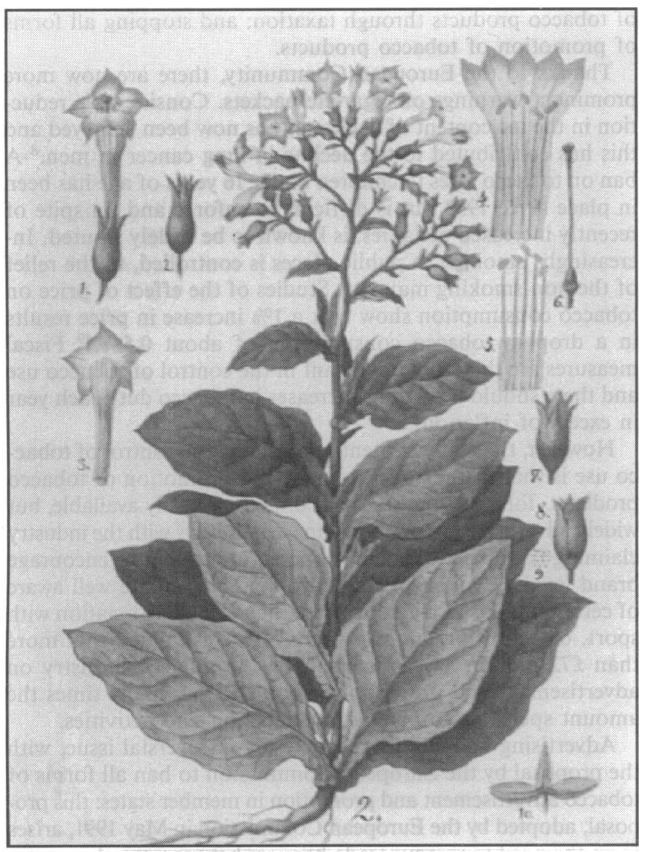

Figure 1. Nicotiana tabacum, *the tobacco plant (Wellcome Institute Library, London).*

women smoked, compared with 48% of men in the lowest socioeconomic group.[13] General practitioners have set a good example with less than 5% of a random sample of 5000 general practitioners in the UK smoking cigarettes in 1988 (though admittedly about another 10% smoke a pipe or cigars).[15] Smoking by young people is a particular cause for concern since smoking almost invariably starts during adolescence. In 1990, 28% of boys and 32% of girls aged 16–19 years were regular smokers.[16]

Health consequences of smoking

Although King James VI and I, almost four centuries ago, viewed smoking as harmful to health, it is only in the last 40 years or so that irrefutable evidence of the damage it causes has been obtained. In 1857, *The Lancet* published the opinions of 50 physicians on tobacco use and concluded in an editorial that 'if the evil effects were so dreadful as stated by some of the opponents the human race would have ceased to exist'.[17]

In 1950, studies were published in the UK and the United States of America comparing the smoking habits of large numbers of patients with lung cancer with those of control patients.[18,19] These studies suggested that heavy smoking increased the risk of lung cancer up to 30 fold and the findings provoked further research on the effect of smoking on mortality. Cohort studies were established in which the smoking habits of large numbers of men and women were elicited and recorded, and the causes of death of those subsequently dying were ascertained. One of these studies was the study of mortality in relation to smoking among British doctors. In October 1951, Richard Doll and Bradford Hill sent brief questionnaires, asking about smoking habits, to the 59 600 men and women doctors on the *British medical register.*[20] They received 40 637 usable replies and this cohort, over the years, has been the source of much of our knowledge about smoking related diseases.[21,22]

In 1962 the Royal College of Physicians published the first of its influential reports on smoking and health.[23] There is now a massive amount of evidence, from case control and cohort studies in many different countries, from observation of the trends in mortality with prevalence of smoking, from changes after stopping smoking, from pathological studies and from laboratory experiments, that smoking makes a major contribution to illness and death from more than 20 different diseases.[8] These diseases include lung cancer, now the commonest cause of death from cancer worldwide.[8] There are also many other cancers to which smoking contributes, and chronic obstructive lung disease hardly ever occurs in non-smokers.[8]

However, the largest number of premature deaths caused by smoking in the UK are from cardiovascular disease, particularly coronary heart disease; the relationship between smoking and coronary heart disease is particularly strong in younger people.[8] The risk of other diseases including gastric and duodenal ulcer, Crohn's disease and hernias, is also increased by smoking.

For women, smoking poses additional hazards, including increased risk of cardiovascular disease associated with oral contraceptive use and probably of carcinoma of the cervix; in pregnancy, increased risk of miscarriage, premature fetal death and retarded physical and mental development of the baby; and earlier menopause with an increased risk of osteoporosis and bone fractures.[8] There is also evidence[24] that smoking decreases fertility in women and increases sperm abnormalities in men.[25]

Finally, there is of course an increased risk of accidental burning associated with smoking. In the follow up of the British doctors study, two doctors had died as a result of setting fire to their bedclothes when smoking in bed.[8]

Smoking may, however, have a beneficial effect on a few diseases. Mortality from parkinsonism is less in smokers than in lifelong non-smokers,[26] and incidence of ulcerative colitis in smokers is half of that in non-smokers[27] and smoking may offer some protective effect against Alzheimers disease.[28]

Passive (involuntary) smoking

In recent years, it has become clear that the harmful effects of smoking are not confined to the smoker.[29] The main concern has been about the possible carcinogenic effects of passive smoking and over 20 epidemiological studies have now investigated this by observing rates of lung cancer in the non-smoking spouses of people who do or do not smoke. The overall estimate is that risk is increased by up to 30% so that several hundred deaths from lung cancer each year in the UK are attributable to the effects of passive smoking;[30] it may also increase the risk of coronary heart disease.[31]

Helping people to stop smoking

In the mid-1970s, a study by Michael Russell and colleagues in London practices showed that simple advice and a leaflet, given in a routine general practice consultation, had a small but important effect in helping patients to stop smoking, not just temporarily, but in the long term.[32] About one in 20 patients given such advice stopped smoking for at least a year.

This has been confirmed in Oxford practices[33] and a meta-analysis of 39 randomized controlled trials of simple anti-smoking advice, in various countries, has shown conclusively that such advice results in long term smoking cessation in about 5% of patients.[34] Higher success rates have been achieved with more intensive interventions and in specialist smoking cessation clinics, but these generally recruit only patients highly motivated to stop smoking, and offer intensive support and follow up.[35]

Little research has been carried out on the efficacy of advice from practice nurses in helping patients to stop smoking. The smoking cessation effect of the doctor referring smokers to a nurse for a health check has been evaluated and the results suggest that, although the referral had a small but significant effect, this was largely owing to the doctor referral rather than to the specific effect of nurse advice.[36] More research on the efficacy of nurses' advice is needed, since they are providing so much of it. The OXCHECK study,[37] a four year randomized trial of the effect of health checks by the nurse on cardiovascular risk factor levels in 11 000 middle aged patients in general practices in the Luton area, is nearing completion. This will tell us whether health checks by the nurse have any measurable hard outcomes.

In recent years, there has been increasing recognition of the importance of nicotine addiction in maintaining the smoking habit and this was highlighted by the 1988 report of the surgeon general in the USA, *The health consequences of smoking*.[38] This 600 page document reviewed a mass of evidence and concluded that: 'cigarettes and other forms of tobacco are addictive in the same sense as are drugs such as heroin and cocaine'.

In specialist smoking cessation clinics, nicotine chewing gum has been shown to have a specific effect,[35] as an adjunct to advice, in smoking cessation, but there has been failure to demonstrate this in general practice trials.[39] In a placebo controlled trial in general practices in Oxford 10 years ago, no significant difference between active and placebo gum was found, but compliance with gum was poor with only 10% of smokers using it at the end of the three month treatment period.[40] So, although nicotine gum is potentially useful in helping many heavy smokers to cope with the nicotine withdrawal symptoms and craving which follow attempts to stop, there are problems with using it.

Some of these problems seem likely to be overcome by new forms of nicotine replacement therapy, particularly nicotine skin patches which provide transdermal nicotine delivery over the course of 24 hours.[41,42] A placebo controlled trial of these patches in over 1600 heavy smokers in 17 practices in the Oxford area is nearing completion. Early results are encouraging and compliance with the use of patches seems much better than with nicotine gum.

Provided it is not harmful, any method a smoker wishes to try in an effort to stop smoking should not be discouraged; desire to stop, confidence in the ability to do so, and belief in a method are crucial factors in success.[43] However, promotion should be limited to those methods of proven efficacy as exaggerated claims for unproven methods may reduce credibility and be counterproductive.

Few people become smokers for the first time in adult life, virtually all smokers acquiring the habit as adolescents.[44] But educational programmes aimed at discouraging young people from smoking have limited success and adult smoking acts as a powerful model for smoking in the young.[44]

Control of smoking: public health, fiscal and political measures

The RCGP,[45] the Royal College of Physicians,[46] and many other national medical institutions, as well as international bodies such as the World Health Organization[47] and the International Union Against Cancer[48] have consistently made recommendations about the control of tobacco use to reduce the disease, disability and premature death which it causes. Measures include: public information and education programmes; strong, prominent health warnings on the packs of tobacco products; reducing the tar content of cigarettes; banning sales to children; controlling smoking in public places; raising the price of tobacco products through taxation; and stopping all forms of promotion of tobacco products.

Thanks to the European Community, there are now more prominent warnings on cigarette packets. Considerable reduction in the tar content of cigarettes has now been achieved and this has contributed to the decline in lung cancer in men.[8] A ban on tobacco sales to children under 16 years of age has been in place since 1933 but is difficult to enforce and, in spite of recently increased penalties, is known to be widely flouted. Increasingly, smoking in public places is controlled, to the relief of the non-smoking majority. Studies of the effect of price on tobacco consumption show that a 1% increase in price results in a drop in tobacco consumption of about 0.5%.[49] Fiscal measures are therefore important in the control of tobacco use and there should be regular increases in tobacco duty each year in excess of inflation.

However, the really contentious issue in the control of tobacco use is that of the advertisement and promotion of tobacco products. Tobacco continues not only to be easily available, but widely advertised and promoted in various ways with the industry claiming the objective is not to increase sales but to encourage brand loyalty. Not surprisingly, young children are well aware of certain brands of cigarettes with their strong association with sport, on television and elsewhere.[50] It is estimated that more than £72 million a year is spent by the tobacco industry on advertisement and promotion in the UK[44] — many times the amount spent on anti-smoking education and activities.

Advertising has recently become a controversial issue, with the proposal by the European Commission to ban all forms of tobacco advertisement and promotion in member states: this proposal, adopted by the European Commission in May 1991, arises from the need to remove trade barriers between member states by harmonizing conditions of trade within the community and for these conditions to be based on a high level of health protection. At the present time, the UK appears to be one of a small group of countries opposed to a ban on tobacco advertising.

British doctors, in line with their support over many years for the control of tobacco use, have been vigorous in campaigning for a comprehensive ban on advertising. Over the last five years or so the British Medical Association has coordinated a tobacco group on which I have the honour to represent the RCGP. This group has played an important part in providing information, lobbying ministers, and generally putting pressure on government to improve measures to control tobacco use. Evidence has been presented of the effectiveness of bans in other countries; Norway has had a ban since 1975, Canada since 1989 and New Zealand since 1990. The RCGP is also a member of a coalition of 30 royal colleges and medical organizations called Doctors for Tobacco Law, established in 1991 with the aim of bringing about a total ban on tobacco advertising and promotion in the UK. Recently, the *British Medical Journal* publishing group has launched an important new journal, *Tobacco Control.*

The RCGP has made quite explicit its opposition to tobacco advertising. In its response to *The health of the nation,* the College called for a total ban on tobacco advertising by 1993 and supported further increases in taxation on tobacco and the banning of smoking in public places.[51] Individual College members can make an important contribution to this issue by writing to their members of parliament and to health ministers.

Finally, it seems appropriate that as the RCGP has been honoured with a royal president during its 40th anniversary year, royal warrants on tobacco products should not remain unmentioned. I cannot deny the unhappiness I feel at the apparent approval which royal warrants bestow on a product which kills 150 000 British citizens each year.

The Indians' revenge

In May 1992, my wife and I were privileged to attend the World Organization of Family Doctors (WONCA) meeting in Vancouver. Visiting the superb anthropology museum at the University of British Columbia we were reminded of the cultural heritage of the indigenous North American Indian population. After the meeting, we visited a Canadian general practitioner whose practice in the Rocky mountains consisted entirely of Indians. Conversations with him heightened our awareness of the achievements of these people and it saddened us to think of the damage to the American Indians which followed the white man's discovery of the new world. However, 500 years after Columbus' voyage, it could be said that, by introducing the white man to tobacco, the Indians have wreaked their revenge.

References

1. Wilson R McN. *The beloved physician.* London: John Murray, 1926.
2. Mair A. *Sir James Mackenzie MD 1853-1925. General practitioner.* Second edition. London: Royal College of General Practitioners, 1986.
3. Michaels J. Etiology of coronary heart disease: a historical approach. *Br Heart J* 1966; **28:** 258-264.
4. Herrick JB. Clinical features of sudden obstruction of the coronary arteries. *JAMA* 1912; **59:** 2015-2020.
5. Osler W. The Lumleian lectures on angina pectoris. *Lancet* 1910; **1:** 697, 839, 873.
6. Marmot M, Elliott P (eds). *Coronary heart disease epidemiology.* Oxford University Press, 1992.
7. Peto R, Lopz AD, Boreham J, *et al.* Mortality from tobacco in developed countries: indirect estimation from national vital statistics. *Lancet* 1992; **339:** 1268-1278.
8. Doll R, Gray R, Peto R, Wheatley K. Tobacco related diseases. *J Smoking-Related Disorders* 1990; **1:** 3-13.
9. Corti EC. *A history of smoking.* London: Harrap, 1931.
10. James I. *A counterblaste to tobacco.* London: 1604 (Facsimile. Amsterdam: De Capo Press, 1969.).
11. Royal College of Physicians. *Smoking and health now.* London: Pitman, 1971.
12. Royal College of Physicians. *Health or smoking?* London: Pitman, 1983.
13. Office of Population Censuses and Surveys. Cigarette smoking 1972-1988. *OPCS Monitor* 1990; SS90/2.
14. Secretary of State for Health. *The health of the nation: a strategy for health in England (Cm 1986).* London: HMSO, 1992.
15. Fowler G, Mant D, Fuller A, Jones L. The 'Help your patients stop' initiative. *Lancet* 1989; **1:** 1253.
16. Lader D, Matheson J. *Smoking among secondary school children in England 1990.* London: HMSO, 1991.
17. Anonymous. Tobacco [editorial]. *Lancet* 1857; 15 March.
18. Doll R, Hill AB. Smoking and carcinoma of the lung. *BMJ* 1950; **2:** 739.
19. Wynder EL, Graham EA. Tobacco smoking as a possible aetiological factor in bronchogenic carcinoma. *JAMA* 1950; **143:** 329.
20. Doll R, Hill AB. A study of the aetiology of carcinoma of the lung. *BMJ* 1952; **2:** 1271-1276.
21. Doll R, Peto R. Mortality in relation to smoking: 20 years observation of British male doctors. *BMJ* 1976; **4:** 1525.
22. Doll R, Gray R, Hafner B, Peto R. Mortality in relation to smoking: 22 years observation of female British doctors. *BMJ* 1980; **1:** 967.
23. Royal College of Physicians. *Smoking and health.* London: Pitman, 1962.
24. Howe G, Westhoff C, Vessey M, Yates D. Effects of age, cigarette smoking and other factors on fertility: findings in a large prospective study. *BMJ* 1985; **290:** 1697-1700.
25. Evans HJ, Fletcher J, Torrance M, Hargreave T. Sperm abnormalities and cigarette smoking. *Lancet* 1981; **1:** 627-629.
26. Baron JA. Cigarette smoking and Parkinson's disease. *Neurology* 1986; **36:** 1490-1496.
27. Logan RFA. Smoking and inflammatory bowel disease. In: Wald N, Baron J (eds). *Smoking and hormone related disorders.* London: Ciba Foundation, 1989.
28. van Duign CM, Hofman A. Relation between nicotine addiction and Alzheimer's disease. *BMJ* 1991; **302:** 491-494.
29. Hirayama T. Non-smoking wives of heavy smokers have a higher risk of lung cancer: a study from Japan. *BMJ* 1981; **282:** 183-185.
30. Wald NJ, Booth C, Doll R, *et al* (eds). Passive smoking: a health hazard. London: Imperical Cancer Research Fund and Cancer Research Campaign, 1991.
31. Beaglehole R. Does passive smoking cause heart disease? *BMJ* 1990; **301:** 1343-1344.
32. Russell MAH, Wilson C, Taylor C, Baker CD. Effect of general practitioner's advice against smoking. *BMJ* 1979; **2:** 231.
33. Jamrozik K, Vessey M, Fowler G, *et al.* Controlled trial of three different anti-smoking interventions in general practice. *BMJ* 1984; **288:** 1499.
34. Kottke TE, Battista RN, Debrise GH, Brekke ML. Attributes of successful smoking cessation interventions in medical practice: a meta-analysis of 39 controlled trials. *JAMA* 1988; **259:** 2883-2889.
35. Jarvis MJ, Raw M, Russell MAH, Feyerabend C. Randomised controlled trial of nicotine chewing gum. *BMJ* 1982; **285:** 537-540.
36. Sanders D, Fowler G, Mant D, *et al.* Randomized controlled trial of anti-smoking advice by nurses in general practice. *J R Coll Gen Pract* 1989; **39:** 273-276.
37. OXCHECK study group. Prevalence of risk factors for heart disease in OXCHECK trial: implications for screening in primary care. *BMJ* 1991; **302:** 1057-1060.
38. United States Public Health Service. *The health consequences of smoking: nicotine addiction. Report of Surgeon General 1988.* Washington, DC: US Department of Health and Human Services, 1989.
39. Lam W, Sze PC, Sacks HS, Chalmers TC. Meta-analysis of randomised controlled trials of nicotine chewing gum. *Lancet* 1987; **2:** 27-30.
40. Jamrozik K, Fowler G, Vessey M, Wald N. Placebo-controlled trial of nicotine chewing gum in general practice. *BMJ* 1984; **289:** 794-797.
41. Abelin T, Muller P, Buchler A, *et al.* Controlled trial of transdermal nicotine patches in smoking cessation. *Lancet* 1989; **1:** 7-9.
42. Tonnesen P, Norregaard J, Simonsen K, Sawe U. A double-blind trial of a 16-hour transdermal nicotine patch in smoking cessation. *N Engl J Med* 1991; **325:** 311-315.
43. Marsh A, Matheson J. *Smoking attitudes and behaviour.* London: HMSO, 1983.
44. Royal College of Physicians. *Smoking and the young.* London: RCP, 1992.
45. Royal College of General Practitioners. *Prevention of arterial disease in general practice. Report from general practice 19.* London: RCGP, 1981.
46. Royal College of Physicians. *Preventive medicine.* London: RCP, 1991.
47. World Health Organization. *Controlling the smoking epidemic. Technical report series no 636.* Geneva, Switzerland: WHO, 1979.
48. UICC (International Union Against Cancer). *Guidelines for smoking control. Technical report series vol 52.* Geneva, Switzerland: Union International Contre le Cancer, 1980.
49. Townsend J. *Tobacco price and the smoking epidemic.* Copenhagen, Denmark: World Health Organization, 1987.
50. Charlton A. Children's advertising awareness related to their views on smoking. *Health Educ J* 1986; **45:** 75-78.
51. Response by the Royal College of General Practitioners to the *Health of the nation.* In: RCGP. *1992 members' reference book.* London: Sabrecrown, 1992: 143-145.

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