has advantages. Some patients who might otherwise be retired from work do manage to cope with a part-time job, thus providing a useful contribution and preserving their role in the community.

Rewards for the innocents

As likely as not I shall be accosted round about 5 December by a young lady with a black face who will present me with a handful of sweets. All this is in honour of a grey-bearded Mr Nicolaas from Turkey in the third century AD. In Holland, Saint Nicolaas arrives on 5 December by steamboat or on his horse, and is dressed in the robe of a bishop. He is always helped by Black Peter, often a girl in knave's costume, who helps to catechise the children or other innocent bystanders and rewards the goodly with snoepjes (sweets). The bishop and his trusty servant are widely observed—not only in the larger stores and

supermarkets, but they even penetrate into the hospitals.

Work stops on 5 December and we all assemble in the coffee room. The laity is addressed and given good advice by the venerable old man, presents are opened, and we eat flaky marzipan cakes. 25 December is a more sober occasion. A Christmas man with flowing beard and red garments is always close at hand but his pedigree is altogether more dubious.

Last winter was really cold and the small canals were frozen solid—nowadays an infrequent happening. Ice skating became acutely popular and the nurses on my ward were slipping away early in the afternoons to get in some practice. There is a popular painting by Avercamp which hangs in the Rijksmuseum in Amsterdam, called *Winter Landscape*, which portrays the scene vividly. Frosted undergrowth, snow-covered gables, and flying scarves. Last winter the Dutch were for once reliving their own picture-book history.

I hope it freezes again this year.

Scientifically Speaking

Advances on the flu front

BARBARA J CULLITON, WALLACE K WATERFALL

Washington, DC By the calendar, the influenza season is arriving in the northern hemisphere. By many other signs, it is arriving in the United States amid uncertainty about what viruses are important this season, what can be done against the viruses, and who can be convinced that it is worth doing.

In part, the uncertainty arises from the predilection of influenza viruses to put on different antigenic make-up from the styles in which they were last seen publicly. To a considerable extent, however, the difficulties of devising an effective immunisation programme against influenza this season in the US may be identified with a residue of mistrust from the badly handled nationwide campaign against "swine flu" in 1976. That debacle still hangs around the fringes of news stories about any public vaccination effort.

Influenza continues to be an important contributor to mortality rates in the US. When combined statistically with pneumonia—which is a frequent clinical progression during epidemics—influenza is the fifth-ranking cause of death. Although antibiotics have reduced the influenza/pneumonia death rate by more than 47% in the past decade, those two continue to make up the only infectious disease category among the 15 leading causes of deaths in America.

Globe-trotting viruses

The virus problem is complicated this winter by the presence of two A types, of relatively equal occurrence, instead of the

usual strong predominance of just one A. Also circulating vigorously is a B-influenza virus, B-Hong Kong. This profusion of influenza viruses circulating simultaneously is highly unusual, according to government health officials. It has been going on for the past two winters and the combination shows no indication of sorting itself out this season.

The A types, in particular, have been undergoing their guileful drifts of antigenicity, but have not always accomplished a quick dominance of the new version over the old, so that occasionally the two strains may be isolated in the same influenza outbreak. Apparently, a world record for co-circulation of A-type viruses was established in the late winter of 1978, when a severe outbreak among students at a Cheyenne, Wyoming, high school produced strains resembling A-USSR, A-Texas, and A-Victoria.

The Cheyenne event was noteworthy for several reasons. The A-Texas and A-Victoria strains, both of subtypes H3N2 by their antigenic description according to haemagglutinin and neuraminidase, are an instance of a previous strain coexisting with the changeling. A-Victoria is believed to have become A-Texas in one of nature's recombinant sprees. The appearance of A-USSR in Cheyenne simply completed a globe-trotting journey of the virus first seen in Moscow little more than two months earlier. The odd thing about A-USSR is that it is a dead ringer for a H1N1 virus that spread all over the world in about 1950, but has not been isolated from influenza cases in man since then. By the most exacting laboratory analysis, the kinship of the two viruses is so close that it has even been suggested that the 1978 A-USSR simply escaped from somebody's freezer samples of 1950 viral isolates. For it to have lurked in some animal species, or even subclinically in man, for 25 years and not have undergone antigenic change is against the nature of an influenza virus. The A-USSR of this season already is discernibly different from the A-USSR of 1977-8, and indeed this year is being called A-Brazil.

This veritable congeries of influenza viruses has led US

5026 Eskridge Terrace NW, Washington DC 20016, USA

BARBARA J CULLITON, AB, news editor of *Science*, the weekly journal of the American Association for the Advancement of Science

WALLACE K WATERFALL, AB, senior professional associate and director, Office of Communications, Institute of Medicine, National Academy of Sciences

government health officials to recommend a vaccine for this winter that includes protection against A-Brazil, A-Texas, and B-Hong Kong. The recommendation occasioned the customary request by health officials that Congress appropriate money to provide free immunisation for chronically ill and elderly Americans. Several million dollars have been made available, but there is no discernible publicity campaign to push people toward the vaccine this season. An increased scepticism about influenza vaccines, and even about other kinds of immunisation, is our legacy of the swine flu affair. Although that ill-fated series of events came to a grinding halt only three years ago, it has swiftly been enshrined in the waxworks of history as a classic instance of public health efforts gone awry. The affair has been studied in retrospect by medical scientists, health-policy analysts, business school economists, professors of public administration—and, most recently and intensively, by lawyers.

Public attitudes towards vaccination

A brief recounting of the events of 1976 is sufficient to show why the affair is probably unique, and why it continues to affect public perceptions of vaccination more generally. In February of that year, an Army recruit at Fort Dix, New Jersey—one of a dozen with a respiratory infection at the time—went on a training hike and subsequently died with pneumonia. For several reasons, which look less compelling now than then, the viral isolate was thought possibly to be a hand-me-down of the extremely virulent agent that had felled multitudes around the world in 1918. Government health experts urged a massive immunisation programme to protect against such an eventuality in the winter of 1976-7. President Gerald Ford accepted the recommendation, asked for \$135m from Congress to pay for vaccine, got it, and instructed pharmaceutical companies to begin manufacture of sufficient vaccine to immunise nearly everyone in the country—over 200 million doses.

From that point onward, almost nothing went right. Most of the vaccine manufactured in the crash programme turned out not to have the neuraminidase component—a lack thought to compromise the vaccine's effectiveness. Insurance companies would not cover vaccine manufacturers against liability suits that might arise in such a mass vaccination programme; Congress eventually had to enact a law making the government liable if something went wrong. Production of other vaccines, the most important being polio, lagged because of the emphasis on flu. Immunisation against swine flu began in October with a great hoop-la of publicity by scientists and government officials who were usually more reserved. Almost immediately, the deaths of a dozen older vaccine recipients in several States caused a temporary halt in the programme until it was determined that the vaccine was not at fault. But then, the increasing occurrence of the Guillain-Barré syndrome in people who had been vaccinated raised new fears. In mid-December, as the number of confirmed paralysis cases climbed above 50, the swine flu vaccination programme was halted, never to be resumed. About 40 million people had received the shots.

In the meantime, three cases of swine flu were detected in the US, all in individuals who had been in contact with pigs. There are no firm figures on the number of patients with the Guillain-Barré syndrome associated with swine flu vaccination. There are guesses that as many as 300 people died of the paralysis. There are more than 1000 legal claims against the government alleging death or injury from the Guillain-Barré syndrome after swine flu shots.

The entire matter of government liability in the wake of the swine flu programme has become a monster. More than 3700 claims were filed, demanding indemnifications totalling \$3400m.

Fewer than a hundred cases have been settled, and only one has gone to trial. Delays in handling claims for injuries that occurred three years ago are potentiating repercussions for many aspects of disease prevention in the US. Government health officials concede that a principal worry is that the swine flu hangover will adversely affect immunisation programmes against childhood diseases.

Last winter's flu immunisation effort—continuing a government programme that has been in effect since the 1960s—managed to dispense only about one million of the 3.5 million doses planned. Congress's General Accounting Office looked into that dismal state of affairs to see what went wrong. The General Accounting Office found, for one thing, that the vaccine had been prepared against A-USSR when the real threat was the new A-Brazil. The antigenic drift of influenza viruses makes a mockery of early vaccine manufacture. Yet, health officials make predictions of future danger on the basis of existing threat. Both professional and public awareness of that disjunction has been heightened since the swine flu affair. Even the Federal Government acts as if it is not operating with firm convictions about flu immunisation; it heralded a \$15m programme but later scaled it down to little more than \$8m.

The General Accounting Office also found that liability problems—stemming directly from the experience with swine flu—last winter made many State public-health officials wary of participation in any flu vaccination effort. The survey of difficulties did not include the opinions of the people likely to be vaccinated, but it is not beyond imagining that those who remember that paralysis was once associated with a flu shot will be reluctant to accept what the government is offering this year.

A vaccine against pneumococcal pneumonia has been on the American market for over 18 months. A recent symposium was convened in New York to discuss why the vaccine has been given to barely 5% of people at high risk of pneumonia. Everyone agreed that the swine flu affair had helped reduce the stature of any vaccine. They also agreed that, while the swine flu experience was not beyond the statistically expectable limits, it appeared much worse to a public that had not been truly informed of the risk.

The way things are going on the flu front, this season's best hope may have come recently from a "consensus development" conference at the National Institutes of Health. The participants endorsed the use of amantadine hydrochloride for both prevention and treatment of all types of influenza A. Studies of prophylactic amantadine in over 110 000 individuals indicate a reduction of A-type flu infection by 35% to 50%, and a reduction of clinical illness by 50% to 70%. Treatment studies show appreciably reduced fever, and periods of illness shortened by 50%. Minor nervous system symptoms crop up in as many as 7% of patients taking the recommended daily 200 mg of amantadine. Amantadine-resistant strains of influenza A develop easily in tissue cultures, the conference was warned, but no resistant strain has yet been isolated from man. Those figures suggest a lesser effectiveness for amantadine than for influenza vaccine. But, in the present atmosphere of mistrust, anything called a "medicine" might be more effective than something called a "vaccine."

No reprints of this article will be available from the authors.

Correction

Procedures in Practice: Kidney biopsy

We regret that an error occurred in this article (23 February, p 547) in the figure listing contraindications to the procedure. The fifth line should have read "prothrombin time ≥ 16 s."