at −70° C (Revco) and transported to home laboratories in liquid nitrogen (−200° C) the following summer. No viruses were isolated from these specimens.

Parainfluenza virus types 1 and 3 have been implicated as agents causing RTI's at McMurdo Station during the 1975–76 austral summer (Parkinson et al., 1979). Spread of these viral agents to South Pole Station during November 1975 was demonstrated by the recovery of two parainfluenza type 1 viruses (figure 1) from summer support personnel working at South Pole Station. The serological responses of 1976 winterover subjects during this period suggests the presence of both parainfluenza virus types 1 and 3 before station closing (unpublished data).

Midwinter infections and serological responses observed in apparently healthy adult humans wintering at South Pole Station suggests the persistence of parainfluenza virus types 1 and 3 in humans. The presence or absence of carrier subjects wintering at an antarctic station may account for the sporadic occurrence of midwinter RTI that may or may not appear at a particular station during a particular year.

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A virucidal handkerchief for helping prevent transmission of respiratory infection at McMurdo Station and Scott Base during the winter fly-in period

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One of us, Elliot C. Dick, briefly visited McMurdo Station and Scott Base in January 1979 (our only field operation in Antarctica during the 1978–79 season) to inform the winterover groups of the respiratory virus transmission interruption experiment planned for the next winter fly-in period (WINFLY, August 1979).

Being able to break the chains of respiratory virus transmission among the personnel of these two bases seems feasible for two reasons.

First, various studies in Antarctica and elsewhere have suggested that respiratory virus infections may be relatively difficult to transmit. The evidence suggesting that respiratory illness may be more difficult to disseminate than popularly surmised has been reported previously by us (D'Alessio et al., 1976; Dick, 1976; Dick et al., 1977), as well as by others (Cate, 1978; Gwaltney, Moskalski, and Hendley, 1978; Reed, 1975).

Second, a virucidal paper handkerchief has been developed that should be able to rapidly inactivate viruses in nasal secretions. Suitable for experimental use, the handkerchief is a 3-ply absorbent paper tissue approximately 144 square inches in area and treated with iodine complexed to a nonionic polymer. It is highly virucidal (see accompanying table).

The table demonstrates the ability of one square inch of this handkerchief to render noninfectious 0.1 milliliter of virus mixed with an equal volume of saliva. The viruses used represent the two general morphologic types involved in respiratory illness—a naked icosahedral virus (rhinovirus 16), which is very resistant to most disinfectants, and an enveloped helical virus (parainfluenza 3), which is easily inactivated.

At the end of the timed period, the iodine is inactivated with sodium thiosulfate. As indicated $10^{6.5}TCID_{50}$ of rhinovirus 16 and $10^{4.5}TCID_{50}$ of parainfluenza 3 can be inactivated below the level of detection (less than $10^{2}TCID_{50}$) within five minutes and one minute, respec-

Table 1. Virucidal activity of iodinated paper handkerchiefs against two common respiratory viruses

Virus tested	Amount of virus remaining ($TCID_{50}$) in one in^2 sample of handkerchief			
	control wipes after 10 minutes	I_2 wipes after 1 minute	I_2 wipes after 5 minutes	I_2 wipes after 10 minutes
Rhinovirus Type 16	$10^{6.5}$	$10^{3.5}$	$<10^2$	$<10^2$
Parainfluenza 3	$10^{4.5}$	$<10^2$	$<10^2$	$<10^2$

tively. Since nasal effluents seldom contain more than $10^5 TCID_{50}$ per milliliter, the approximately 144-square-inch handkerchief should inactivate completely the virus in any nasal effluent discharge therein.

Contamination of hands with nasal effluent may also disseminate virus (Gwaltney, Moskalski, and Hendley, 1978; D'Alessio et al., 1976). The ability of one square inch of the virucidal handkerchief to inactivate $10^{7.5}$ $TCID_{50}$ of rhinovirus 16 (in saliva) on the skin was tested. The titer was reduced to 10^3 $TCID_{50}$ after one minute of contact time and to $10^{2.5}$ $TCID_{50}$ after five minutes.

This 100,000-fold reduction in infectivity in one to five minutes should stop or greatly diminish the possibility of fomite or hand-to-hand virus transmission. It will be tested at McMurdo Sound and Scott Base during WINFLY 1980.

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Medical summary for a remote antarctic field party, 1978–79

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A 10-man party carried out geological and geophysical investigations for about 7 weeks in the 1978–79 summer in the areas of Dufek Massif and the Forrestal Range in the northern Pensacola Mountains, at latitude 83°S (Ford et al., 1979). Work was based from three tent camps, using snowmobiles for transport. Camp elevations ranged from 800 to 1,500 meters and work elevations reached 2,100 meters. Temperatures ranged from −21° F to +18° F, with wind chills to −60° F. Activities ranged from sedentary (tent confinement during bad weather) to strenuous (climbing with packs over steep terrain).

Anticipated medical problems in such conditions are systemic dehydration, sunburn, and physical injury. Mild constipation was the only sign of systemic dehydration. This responded to purposeful increase in fluid intake and, in one case, to Surfak. There were no problems with sunburn except minor conjunctivitis. Sunscreens with PABA and benzophenones, in addition to zinc oxide and Labiosan, were adequate skin protectors. For some individuals, the dark glasses made specifically for antarctic use did not provide enough lateral protection from reflected and direct sunlight, and the plastic sideshields provided by the National Science Foundation do not filter ultraviolet light. The only physical injury was a possible cracked rib from a fall onto an ice axe.

A few problems of interest were encountered: (1) carpal-tunnel syndrome (inflammation of the tendons and nerves in the wrist), probably cold-induced, and successfully treated with topical methyl salicylate; (2) sleep disturbance in one person, which came on during a several-day storm and disrupted his work routine, was unusual in that he reverted to his normal Pacific Coast sleep schedule despite having adapted well to McMurdo Station and other sleep schedules in between; (3) opening up of a 25-year-old scar on one person's thumb after 3 weeks in the field, despite a high vitamin C diet (one wonders if similar reports by Dr. Wilson on R. F. Scott's polar expedition were not due as much to dehydration of the skin as to scurvy); and (4) an unusual pattern of numbness of the large toes experienced by 6 party members. The numbness set in gradually over several weeks. None of the six had chilled their feet to the point of numbness. Two, working on flat terrain, wore only mukluks; the others wore double leather climbing boots, two using Galibier boots on flattish terrain and two using Asolo boots on mostly steep terrain. None had previously frostbitten their large toes, although one had