



POLAR EXPEDITIONS : NEW STYLE

Sportsmen Should Benefit From Byrd's Latest Venture

DURING the Arctic winter of 1895-96, Fridtjof Nansen and his companion Johansen lived in a small tent without exercise, sunlight, or varied diet. In the spring they came out to end the *Fram* adventure in perfect health.

This year, 139 sailors, scientists, mechanics, air pilots, radio operators, and half a dozen other different specialists, will live in luxury at two bases in Antarctica.

Nansen and Johansen fed themselves, with a few rounds of ammunition, on a diet of nothing but meat and fat.

Admiral Byrd's third Antarctic expedition will live on the fat of the land, with chemical capsules to counter dietetic deficiencies that Nansen did not notice.

Nansen travelled 580 miles by sledge and 120 miles by canoe, over the Polar Sea and the northern ice from the *Fram* to the Franz Josef island group.

Admiral Byrd's party will travel in aeroplanes, in army tanks, on tractors, or in a huge snow cruiser with the biggest rubber tyres in the world.

Has Become a Science

Exploration, in short, has become a science. It has been, and still to a certain extent is, a sport, if the word will serve to describe high adventure. When Nansen's expeditions had corrected the mistakes of all the others, Arctic exploration became a matter of less organisation rather than more. Failure followed the big, lavishly equipped expeditions of the last century. Success came to small expeditions, equipped hardly any better than Stone Age tribesmen, save for rifles.

But with America and Russia swinging the pendulum, exploration in the cold lands has swung back into the hands of the super-organisation.

British explorers have not followed the trend. The Gino Watkins school, as it may be called—the amateur but efficient

groups of young university students—have adopted the Nansen technique. They travel light, live off the country, like Eskimos. They attempt to out-Eskimo the Eskimo. Wilkins, who perhaps this year might have organised an expedition capable of approaching the scale of Byrd's, and co-operating with it, has never really gone so far with his organisation and in any case has now been stopped by the war.

Champagne for Russians

Russia has thrown science into the fight for knowledge as lavishly, perhaps more lavishly, than America. With single-engined aeroplanes that carry up to 10 tons, Russia has put bases all over the Polar Cap, kept them stocked, and fed her scientists living in them on paté de fois gras, caviare, and champagne.

The human element in exploration remains, but only in part. The ingenuity of the individual is giving place to the ingenuity of the whole of science. Where Man once ventured alone, to pit his small resources against great obstacles, he now assembles all his forces to reduce the obstacles to minor difficulties. When once he changed his habits to suit his environment, he now carries with him, and establishes where he needs it, a complete new environment suited to his normal habits.

"A Joy Ride"

Admiral Byrd is doing just that. United States Congressmen who wanted to refuse him a grant for expedition expenses last June, claimed his trip was "a joy ride." As a description of a scientifically conceived and equipped expedition, this was hardly apt; but it could apply to stress a comparison of life in the Antarctic, 1939, with life on such Odysseys as Scott's last sledging party.

The *North Star* and the *Bear* will serve two townships in Antarctica. Residents will have light and heat, radio, a good deal of fresh food, libraries, music, concerts, and every aid science can supply for their work.

The sporting element has gone, and come again, changed. Just as science has replaced adventure in exploration, the discoveries of science in its researches

during such expeditions as this may materially affect adventure, or sport, in wider fields.

Of Value to Sportsmen

Most notable example of this trend will be the work of Dr. Paul Siple, in charge of the West Base. With the assistance of a pathologist he will investigate bodily reactions to the cold, to the unusual atmospheric conditions, to strenuous exercise in the strange surroundings; and the effect of the known processes by which Science has learnt to help the human organism adjust itself.

The plans he described for *The Listener* will not, of course, affect only sportsmen and adventurers. But it has been the sportsman's urge to adventure that has made possible most of the research on which Dr. Siple bases his present knowledge, and will base his future investigations. Explorers of the future will want to know what he finds out about the job of keeping the body well-fuelled and fit. Pathologists will be interested in his observations of the reactions of the body under extreme conditions. Dieticians will wait eagerly for his reports on controlled experiments over long periods. Athletes of all sorts will be interested in whatever he learns about what makes muscles work harder and last longer.

In contrast to the Everest expeditions, which are actually up against much more involved problems, or to the Watkins expeditions, which reduced their problems to the extreme of simplicity and simple treatment, this Byrd expedition has paid little attention to the make-up of its general diet. They have some live sheep and fowls to supply fresh food. The ordinary non-perishable foods in their stores have been carefully selected to give maximum value for minimum weight and bulk. But the complicated analyses of every ounce in terms of vitamin and calory (energy) values have been avoided to a considerable degree by recourse to the chemist.

The Chemist's Part

Other expeditions have been almost at their wits' end to find foods of high caloric value which would also supply the full list of vitamins. Really good energy foods, such as fine ground grains, contain little vitamin. Others, containing plenty of vitamin (mainly fresh foods) will not keep, are too bulky, too expensive, too heavy. The balance has been hard to strike. Dr. Siple will feed the men of Byrd's expedition on a variety of general food. He can change

the diet at will, considering, in the main, only its value as a source of energy. For the chemists have given him the vitamins in capsule form.

Vitamin C, to prevent scurvy, will be supplied in the required number of units by the administration to each man of one anti-scorbutic capsule per day. Vitamin B, the element that prevents certain "deficiency diseases" will be similarly distributed. The others, A, D, E, and the many extras dietetic science has been discovering lately, will be lumped together in one capsule. So that the minimum vitamin content necessary in each man's food intake will come each day from three small pills, weighing a few milligrammes, and taking no more space than two or three orange pips.

Effect of "Wind-Chill"

With this simple system, Dr. Siple will be able to use selected men as "controls" for experimentation. Against what he calls "wind-chill" standards, he will measure calory outputs, or the men's energy requirements and output. The graph will be compared against meteorological, geographical, and even geological charts, so that the whole question can be weighed thoroughly with all factors taken fully into consideration. He will know, for instance, what the "wind-chill" effect may be at a given place, at a given season, in given weather; and his experiments will show him just what food and equipment was required under those conditions to keep men fit and working well. The "wind-chill" he explains as a telescoped word for indices representing a combination of the two most serious factors in health in the Antarctic: the wind and the cold.

They Won't "Catch Colds"

Special value will be given his results by the almost ideal circumstances under which the experiments will be made. Down there, Dr. Siple says, even in so large a body of men, the doctors will be surprised if any common cold develops over the whole period of their residence. The men may take some bacteria with them—the bacteria inevitably connected with living in "civilised" centres—but Dr. Siple does not think there will be sufficient to affect their future health in the germ-free air of the Antarctic.

With all contagious diseases ruled out, the scientists will be free to concentrate directly on the problems in which they are interested.

Investigations on such a big scale have never been made before. The results will have wide significance.