



Moroccan carpenter Abderrahman Bouchareb and Virginia Hazzard examine a solar cooker that Bouchareb makes in his shop.



Mrs. Hammouche Abdeslem, wife of a commune leader, pours oil into a black frying pan that is supported over four concentric rings of board covered with aluminum foil. The foil reflects sun's rays onto pan.

They're Trying It in Morocco

Cooking With

By ROBERT D. LEE

AN EXPERIMENT WITH SOLAR COOKERS in Morocco is reviving old hopes that the world's poor may someday prepare their meals with the free energy of the sun. Several hundred families in the province of Fez in northern Morocco are trying out a new type of solar cooker. Unlike models tested previously in the Middle East and India, this one is inexpensive and easily reparable. A carpenter in the town of Sefrou, 16 miles south of Fez, turns them out for \$5 each.

Moreover, the gadget works. It fries eggs, boils water or cooks couscous, the favorite Moroccan dish, which is a lamb or chicken stew eaten over a granular wheat base. The solar cooker will bring a quart of 80-degree water to boil in 10 to 15 minutes.

FEW OTHER COUNTRIES offer climatic conditions as favorable for solar cooking as Morocco. The sun shines in Fez an average of 300 days a year. Only in December and January is it too low in the sky to be of much use. In those months a family with a solar cooker has only to revert to the use of wood, charcoal and sheep dung. According to a survey done in the Fez area, the average family now spends between \$2 and \$3 a month for wood and charcoal. A solar cooker would pay for itself in a few months.

There is another reason why the solar cooker may succeed in Morocco: an American named Virginia Hazzard. A United Nations community development expert,

she looks a bit bookish, fragile, but isn't. She goes at her work with the charm of a woman and the skill of a first-rate politician.

IT WAS MISS HAZZARD'S idea to bring solar cookers to Morocco. In January of 1965 she wrote U.N. headquarters in New York to see if someone had invented a sun stove that might be useful to Moroccans, to whom the sun, next to Islam, is the most important fact of daily existence. The U.N. passed the inquiry along to the Schenectady, N.Y., offices of a group called the Volunteers for International Technical Assistance (VITA). Some 1,200 members—scholars, scientists and technicians—give spare time to solving problems posed in the Third World by the struggle for economic development.

VITA had been working on a solar cooker and immediately sent Miss Hazzard a model designed by one of its members. The cooker looks like an archery target with a long arrow sticking in the bullseye. The "target" is a reflector made up of four concentric rings of pressed board covered with aluminum foil. The rings are anchored at angles that cause the sun's rays they reflect to be concentrated at the end of the "arrow." There a steel ring that serves as a "burner" is attached.

MISS HAZZARD TESTED the cooker on Moroccan food under a Moroccan sun. It worked. "Please tell me how I can have them made here," she quickly wrote VITA. This time a response was slower in coming. Here the Peace Corps entered the picture. VITA trained Peace Corps volunteer Ed Kianka, who had already served two



Mrs. Abdeslem, her one-year-old daughter, **Fatima**, on her back, breaks an egg into the sizzling oil. Such public demonstrations by influential persons are necessary if a new idea is to gain acceptance by villagers.



Aicha Abdeslem, 16, carefully turns over the egg. **Driss** is her four-year-old brother. The conical structure at upper right is a traditional oven used for baking.

the Sun

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A Watched Pot That Always Boils

learned how to cut out the rings of pressed board on his jigsaw and how to shape the crucial braces that give the rings their proper reflecting angles. VITA provided the aluminum foil and a special heat-resistant glue, as well as the first 20 orders for cookers.

AFTER THAT IT WAS up to Miss Hazzard to drum up business. She went to provincial officials and asked them to urge the 60 communal councils in the province of Fez to purchase demonstration cookers. The officials honored her request promptly, but responses from the communes drifted in slowly. It was the spring of this year before all the orders were placed. Forty communes asked for 100 cookers. Bouchareb built them, assembly-line fashion, and Miss Hazzard began distributing and demonstrating them. She would bring a cooker into a market place, set it up with the help of local officials and call for a black pan (needed to absorb the solar rays), cooking oil and an egg. Eyebrows would raise when the oil started to sizzle in the pan. Broad smiles appeared when the egg started to fry. And lips smacked at the first taste of the finished product. The villagers would then ask how much the cooker cost and where they could buy one.

After the demonstration the cooker would go to a family, chosen by the com-

mune, to use for two weeks. Miss Hazzard made sure that the woman of the house knew how to adjust it. Such families usually were receptive to the innovation and promised to use the cooker every day. Miss Hazzard was well aware that a single defective cooker could sour an entire community. For this reason she had Bouchareb test every cooker before it left his shop. For the same reason she hesitates to turn the design over to a company that could mass produce the cooker. It would mean, she feels, giving up control over quality and price.

NEVERTHELESS, if the solar cooker is to become a household item in Morocco, someone must take responsibility of making and selling it. Bouchareb is a carpenter, not a salesman. And as long as he continues to reap a good living from carpentry, he is not likely to go into the solar cooker business. An alternative favored by Miss Hazzard is that the Moroccan government take over the cooker project. Quality and price controls could thus be maintained. But, she admits, a government operation would be less efficient than a private one. A decision has not yet been reached. But whatever it is, it will affect the future of solar cookers not only in Morocco but in the rest of the underdeveloped world.

