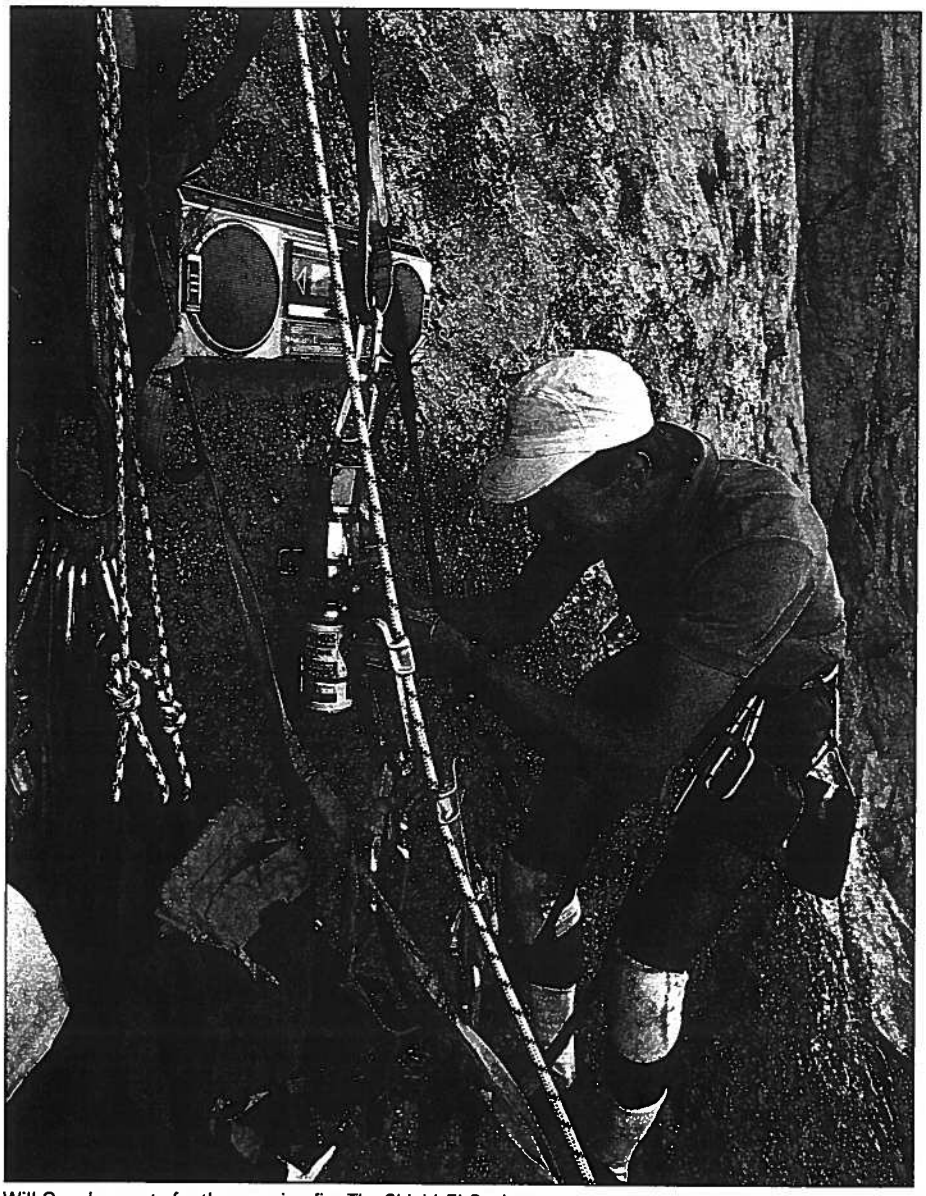
Stoves



BETH WALD

Will Oxx desperate for the morning fix, *The Shield*, El Capitan.

Frying high
How to choose a stove for your next climbing trip

BY MARK SYNNOTT

I remember when I bought my liquid gas stove from a grungy English climber in Yosemite, how he had used its funky-looking fuel jet and generator tube as a prime selling point. He claimed the stove burned a lot hotter since he had modified it. I finally had a chance to verify his claims one late November in Norway.

The weather was turning bleak in Romsdal and nobody wanted to go with me to climb the nearby Troll Wall, so I decided to hike up the back side for a view down the face instead. After three days of bushwhacking, I set up the single-wall tent I'd borrowed on a small glacier below the summit. That night I experienced a true Norwegian blizzard, and the wind shook my little shelter so vigorously it seemed only a matter of time before I'd be enduring an open bivouac.

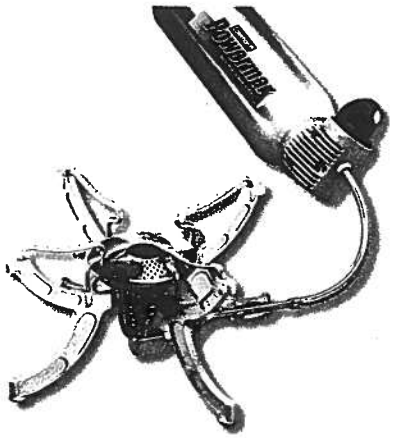
That odd-looking stove seemed to be running fine, though, cranking out heat for endless brews of golden tea. But after a while, the combination of strong caffeine and lack of sleep began to impair my judgment. Just what was that fluid pooling up on the floor of the tent? There was so much of it I knew it couldn't possibly be fuel. But I couldn't see any rain getting in either, so I figured that a simple test was to give it a spark with my lighter. If it blew up: gasoline. If not: water. Sure enough, the tent, my bivy sack, and sleeping bag all ignited before my eyes. I barely escaped by pouring the last of my water on myself and jumping from the burning remains of my bivy.

I was able to straggle down the mountain in a long day, cold and forlorn. In the meantime, I've learned enough about stoves to avoid paying cash for fireballs.

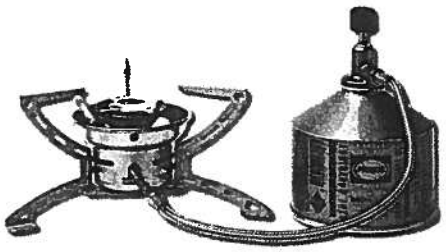
There are numerous models of stoves available, and no single one will be your best choice in every situation. You might need to change your stove to suit your plans — bigwalls, alpine climbs, or basecamp cooking — and also, due to fuel availability, according to your travel destination.

Canister Stoves. Canister, or cartridge, stoves usually run on butane, propane, or a mixture of the two, with the butane/propane mixes burning hottest when the temperature drops to freezing. The compatibility between canisters and stoves does not have to do with fuel type — all stoves can burn all the fuels — but rather with stove design. If you can fit the cannister to the stove, you can use it.

There are two main canister types: those that release fuel through a puncture (almost unheard of in North America) and those that have a re-sealing valve that closes when the canister is removed. Some companies make adapters that can allow you to use your re-sealing valve type stove with puncture type canisters but these adapters may



Peak 1 Micro Stove



Primus MFS 3288 Multi Fuel

Bibler/Black Diamond Equipment Ltd.

500 Dealers Catalog/yes. Mail order/yes.
2084 East 3900 South, Salt Lake City, UT 84124
801-278-5533

Model	Price	Weight	White gas	Butane/Propane	Unleaded gas	Kerosene	Aviation fuel	Jet fuel	Alcohol	Naphtha	Stoddard solvent	Adjustable flame	Hanging suspension	On-board fuel tank	Off-board fuel tank	Reviewed/Other info.
Hanging Stove	$85	1lb 13oz*	•								•	•	•			#145 *includes windscreen, 2 qt pot, lid, handle & stuff sack.

Mountain Safety Research

1600 Dealers. Catalog/yes. Mail order/no.
PO Box 24547, Seattle, WA 98124
800-877-9677

Model	Price	Weight	White gas	Butane/Propane	Unleaded gas	Kerosene	Aviation fuel	Jet fuel	Alcohol	Naphtha	Stoddard solvent	Adjustable flame	Hanging suspension	On-board fuel tank	Off-board fuel tank	Reviewed
DragonFly	$100	1lb 1oz	•		•	•	•	•		•	•	•			•	#183
WhisperLite International 600	$70	14oz	•		•	•		•							•	#145
WhisperLite Shaker Jet	$60	14oz	•												•	
XGK Expedition	$90	1lb	•		•	•	•	•		•	•				•	
RapidFire	$45	13oz		•								•			•	

Outbound Products

600 Dealers. Catalog/yes. Mail Order/no.
8585 Fraser Street, Vancouver, BC Canada V5X 3Y1
604-321-5464

Model	Price	Weight	White gas	Butane/Propane	Unleaded gas	Kerosene	Aviation fuel	Jet fuel	Alcohol	Naphtha	Stoddard solvent	Adjustable flame	Hanging suspension	On-board fuel tank	Off-board fuel tank	Reviewed
Sigg Fire-Jet	$85	11oz	•		•	•				•	•			•		#145

Peak 1/Coleman

1200 Dealers. Catalog/yes. Mail Order/yes.
PO Box 2931, Wichita, KS 67201
800-835-3278

Model	Price	Weight	White gas	Butane/Propane	Unleaded gas	Kerosene	Aviation fuel	Jet fuel	Alcohol	Naphtha	Stoddard solvent	Adjustable flame	Hanging suspension	On-board fuel tank	Off-board fuel tank	Reviewed/Other info.
Xtreme	$75	11oz		•*							•			•		*Powermax
Xpert	$60	14oz		•*							•			•		*Powermax
Apex II	$65	1lb 3oz	•		•	•				•	•			•		#145
Multi-Fuel	$60	1lb 5oz	•			•				•	•		•			
Feather 44Z Dual Fuel	$55	1lb 7oz	•		•					•	•		•			
Feather 400	$49	1lb 7oz	•							•	•		•			
Micro Stove	$25	6oz		•							•			•		
Backpack	$30	8oz		•							•			•		

not be available in North America. Ask your local retailer, or the company directly, about compatibility between canisters and stove.

Canister stoves are generally lightweight, clean burning, easy to use, and dependable. For these reasons they are often the stove chosen by Himalayan mountaineers and those who want to travel fast on alpine routes — no messing around with liquids that can leak into packs, flare up while priming, or cause dirty carbon build-up.

The major enemy of canister stoves is the cold, because the compressed gas needs heat to expand. In below-freezing temperatures, most people use some type of heat exchanger with these stoves. A heat exchanger may be as simple as holding a cigarette lighter under the canister (dangerous and not recommended), or as complicated as fitting a copper tube to run through the flame and down around the canister. The copper tube simply heats up and then transfers this warmth directly to the gas (see Equipment No. 145). Without an effective heat exchanger, a cold canister can put out so little juice that the stove will struggle to melt snow, let alone boil water.

Nevertheless this type of stove is popular on alpine climbs in the Himalaya. To a degree, higher elevations may help your canister stove burn better. A reduction in air pressure could enable the released gas to expand faster and please you with more heat than you'd get at lower elevations in the same air temperatures. Of course, usually, the higher the altitude the lower the temperature, but 22,000 feet in the Himalaya is not always colder than 6000 feet in Alaska, or even Colorado, for example.

Canister stoves are either a burner that screws onto the top of a canister or they are a burner separated from a canister by a tube, the latter being less easily fitted into a hanging system. My favorite canister stove fits in the palm of my hand, which makes it easy for me to carry two just in case I break or drop one — no stove means no climbing.

Liquid-gas Stoves. Liquid-gas stoves are very popular because they have some big advantages over the easier-to-operate canister designs: they burn far hotter, can melt snow in sub-zero weather, and run on cheap fuel available almost anywhere. Some will even burn several different fuels. I have used liquid-gas stoves on many big-wall ascents.

A few stoves run only on alcohol or solvent, which is incredibly clean burning, but won't burn hot enough to be practical for melting snow when alpine climbing.

Although the alcohol or solvent fuels are unsuited to my needs, I hate dealing with black soot that can coat the outside of my stove and always try to run the cleanest fuel I can find. A good white gas is about the cleanest stuff you can burn besides alcohol or solvent, plus it puts out a lot of heat. Many companies make white gas; Coleman fuel is one form of this, as is naphtha, and, in Canada, Blazo.

A liquid-gas stove that is simple to understand has a big advantage because you need to know how to grease it and reseal the fuel pump; where the generator tube is, and how to clean it; and where the jet is, and how to dislodge a blockage. At the very least, figure out how to do all these things before taking the stove on an expedition.

Weight. To me, saving weight is a lot more important on an alpine climb in Patagonia than on a wall. On a big wall all the gear is hauled with a pulley, not carried on the back, so most people take along the kitchen sink.

Adjustability. I place a premium on having an adjustable flame on my stove. I find myself needing to simmer almost every time I cook. Uncontrollable, nuclear-like heat is great for turning snow into boiling water, but is a real hassle when trying to simmer rice or noodles, and you'll waste a lot of fuel in the process.

Onboard or off-board fuel tanks. With canister stoves I prefer having a fuel tank that attaches directly because they are lighter. However, I want the opposite for liquid-fuel stoves. Onboard fuel tanks are not removable, so the stoves are harder to pack because they're bigger. Another problem is that you always have to funnel fuel into the main tank when it runs low, whereas with the fuel bottle separate you can usually just switch bottles without simulating a volatile lab experiment in the tent or portaledge.

Fuels abroad. Sometimes, your stove choice will be dictated by available fuel. Airlines will not permit fuel to be checked or carried aboard planes, and might even prohibit empty fuel bottles and stoves too. These must be absolutely dry to be safe and to stand a chance of being permitted aboard. Hiding such items risks a possible $25,000 fine.

In Patagonia, most climbers carry canister stoves, but recently, the Epi gas and

VauDe Sports Dragon

EDITORS' PICKS ◎

MSR Whisperlite Internationale 600
Why? Cooks like a blowtorch; compact and lightweight; easy to repair in the field; works with almost any fuel, including gas straight from the European pumps.

MSR Dragonfly
Why? Reliable; burns almost any fuel; burns hot.

VauDe/Markhill Stormy
Why? Sturdy hanging design; packs tight; fuel bottle hangs next to the burner, where it is slightly warmed, a bonus in cold temps.

Primus HPS 3243
Why: Weighs only 7 ounces without cartridge; compact; cooks plenty hot for any use in the lower 48.

Primus suppliers have pulled out, so only the Bleuet, puncture type (non-resealing) canisters are available. These canisters must stay on the stove till empty and if the fuel knob gets turned on while in your pack and you decide to spark-up — kabloooie! As mentioned above, adapters exist that can turn a puncture canister into a resealing one, but these seem to be unavailable in the United States.

On Baffin Island almost everyone uses white gas, because that and gasoline are the only fuels available. You won't find any canisters on the island, and to ship them in yourself is so expensive that you might as well hire Julia Childs as your basecamp cook at the same time. Because the liquid fuels are not affected by the cold, all the Inuits throughout the arctic run their stoves on white gas.

I am fond of the so-called "international" stoves that will run on white gas, jet and aviation fuel, and sometimes kerosene. You can find at least one of these fuels almost anywhere in the world, although the quality varies from one place to another. ◐

PETE TAKEDA

Jeff Hollenbaugh cooking with a homemade hanging stove in the Black Canyon, Colorado.

Primus/Suunto USA

800 Dealers. Catalog/yes. Mail order/no.
2151 Las Palmas Drive, Suite G, Calsbad, CA 92009
800-543-9124

Model	Price	Weight	White gas	Butane/Propane	Unleaded gas	Kerosene	Aviation fuel	Jet fuel	Alcohol	Naphtha	Stoddard solvent	Adjustable flame	Hanging suspension	On-board fuel tank	Off-board fuel tank	Other info.
MFS 3288 (Multi Fuel)	$100	1lb 1oz	•	•	•	•			•	•	•	•			•	
HPS 3243 (Hi-Powered)	$59	7oz		•							•		•			
LFS 3278 (Liquid Fuel System)	$63	14oz	•		•	•			•	•	•	•			•	
ULT 3273 (Ultra Lite Titanium)	$199	3oz		•							•		•			
PSS 3244 (Primus System)	$98	2lbs 5oz		•							•	•			•	

VauDe Sports

500 Dealers. Catalog/yes. Mail order/no.
PO Box 3413, Mammoth Lakes, CA 93546
800-474-1539

Model	Price	Weight	White gas	Butane/Propane	Unleaded gas	Kerosene	Aviation fuel	Jet fuel	Alcohol	Naphtha	Stoddard solvent	Adjustable flame	Hanging suspension	On-board fuel tank	Off-board fuel tank	Reviewed/Other info.
Stormy	$109	1lb 9oz		•								•				#145 Hanging cook set works separately with other stoves.
Vulcano	$27	10oz		•											•	
Dragon	$30	11oz		•											•	
Devil	$20	8oz		•											•	

ZZ Manufacturing, Inc.

200 Dealers. Catalog/yes. Mail order/no.
1520A Industrial Park Street, Covina, CA 91722
800-594-9046

Model	Price	Weight	White gas	Butane/Propane	Unleaded gas	Kerosene	Aviation fuel	Jet fuel	Alcohol	Naphtha	Stoddard solvent	Adjustable flame	Hanging suspension	On-board fuel tank	Off-board fuel tank	Other info.
111A Sierra Basic	$51	1lb 2oz									•					Woodburning-solid fuel.
111B Sierra Upgrade	$55	1lb 4oz									•					Woodburning-solid fuel.
111C Sierra Complete	$68	2lb*									•					Woodburning-solid fuel, *weight includes ket. lid.