

**BMW ACA
Puget Sound Region**

Zündfolge

July 1991



**Concours d'Elegance
on July 20th**

**Gymkhana in
Tacoma on July 21st**

**Yakima Valley
Wine Tour**

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Cover: The M8 that will never be. See page 7.

Vol. 21, No. 6
July 1991

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Activities

Gymkhana Set For Fife

by Gary Parr

In years past we have always followed the Concours d'Elegance with some sort of driving event. This year we've decided to have a gymkhana. "Gym-what"? you may ask. Well a gymkhana is strictly a fun time driving event. Car, driver and passenger must drive through a predetermined course performing stunts and antics along the way. This is a timed event where physical dexterity is as important as driving skills. As fun to watch as it is to do. Prizes will be awarded for 1st, 2nd, & 3rd places.

The kind folks of the Executive Inn in Fife have allowed us to use their parking lot. Take the Fife exit from I-5 then go North at the light on Old 99 about 1/4 mile. The Executive Inn will be on your right. Look for all the BMWs. The date is Sunday July 21st and we'd like to hve everyone there by 1:00 p.m. to get underway by 2:00. There is no charge to participate.

To thank the Executive Inn for their hospitality, we encourage everyone to visit Christie's Restaurant at the Executive Inn after the event for refreshments or dinner. So find yourself a partner and plan to have a great time.

Wednesday Nighter Set For August

We have scheduled a multi-club open track night for Wednesday, August 28th. This year we have invited the Alfa Romeo and Porsche clubs to join us for an evening of full track driving. We have set a limit of 50 cars so don't wait until the last minute to sign up. We are requiring that all drivers have prior track experience. The cost is \$40 for preregistration and \$55 the day of the event. Refunds will be given up to the Friday before the event. We plan on getting things underway around 4:00. To sign up or have any questions answered regarding this event contact Gary Parr at 472-4505 evenings or 922-4378 days.

Calendar

- July 20** **Concours d'Elegance** at Chateau Ste. Michelle Winery in Woodinville. The club's biggest annual event. See article on page 6.
- July 21** **Gymkhana.** At the Executive Inn in Tacoma. See article in adjacent column.
- July 28** **Tech Session.** Tom Nast and Chuck Christensen will show you how to change brake fluid and linings. See small article on page 9.
- August 17** **Driving School at PIR.** Sponsored by the Portland chapter but we're invited. Call Driving Events Chairman Gary Parr for more info.
- August 28** **Track Night at SIR.** A Wednesday night stress management session at Seattle International Raceway.
- September 7-8** **Yakima Valley Wine Tour.** Past Prez Tom Williams leads this blitzkreig of the wineries in the Yakima Valley.
- October 19** **High Performance Driving School at SIR.** If you own a BMW, you should attend. This is the *only* way to drive that bimmer properly.

BMW ACA events are partially supported by a generous grant from BMW of North America, Inc.

BMW Seattle Open House

You'd have to call the June 20th Open House a success. Over 500 people attended including lots of club members. Food was abundant and the wine flowed freely. A classical quartet played in the background.

The real stars were the cars. We got our first look at the 325i four door. It's a nice looking car. A test drive the next day proved it's fast, too. With 190+ horsepower it ought to be. Silky gearbox and crisp handling, too. They're going to sell a bunch of these.

Also on display were three 850is. The new blue was either loved or hated. I loved it. The 850i in black was sexy.

David Griffith & Co. followed up the next evening with a garage sale for club members only. It was also a big hit with virtually everybody walking out with armloads of stuff. Great bargains.

Thanks BMW Seattle for a couple of great events.

-David Lightfoot.

Grape Quest - Club Wine Tour '91

by Tom Williams

This year's club wine tour to Eastern Washington will be held the weekend of September 7-8 (the weekend after Labor Day). We will visit a number of fine Washington wineries, enjoy some good company, and with luck, partake in some (relatively) unfettered motoring. If you enjoy driving, this is the tour for you!

A special invitation to those who have either never been to a club event or are new members: tours are a fun way to participate in the club. They're non-competitive events built around an enjoyable diversion (such as wine-tasting) which allow you to enjoy others' company in a relaxing atmosphere. You also get the opportunity to run your car a bit as well. That, too, is part of the fun!

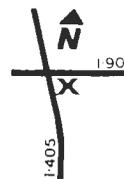
The plan is to head across the pass to Yakima and spend Saturday tasting our way down the Valley. We'll have dinner and spend the night in the Tri-Cities area. Sunday morning a brunch is planned. After that, it's driver's choice: either up I-82 for a lazy trip back home; or a short jaunt southeast to the Walla Walla area for their wineries' annual fall open house.

I know I'll be asked so let me dispense with the anticipated objection straight away: why do we need to go *all the way* to Walla Walla? What's there besides onions, anyway? For one thing, it's not all that much further away, less than an hour. For another, how about the attraction of some wonderful Cabernet Sauvignon and Merlot, courtesy of Leonetti and Woodward Canyon? These two wineries have developed into meccas for Northwest red wine lovers. And lest those preferring white wine feel neglected, be assured that several of the area wineries, including the aforementioned Woodward Canyon, have won awards for their white varietals. There will be plenty for all to enjoy on this leg of the journey. And we'll *still* be back in town at a reasonable hour.

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More details will be forthcoming in the August issue. If this tour sounds too good to pass up (and it should) give me a ring at 283-1056: we'll need to make dinner reservations for Saturday. If there is enough early interest (again, let me know) I'll see what can be done about getting a group rate for the motel Saturday night. In the meantime, give me a call if you have any questions about the tour. A general itinerary should be available by the time you read this; if you're interested, let me know, and I'll send you one.

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Special Mailing

Well, we did it. Over 13,000 copies of *Zündfolge* went to BMW owners all over Western Washington. I was astonished by the number of BMWs currently registered in the state. Over 15,000 and over 9,000 just in King County.

Thanks to Tom Williams who did the original solicitation letters to potential advertisers and to my wife, Lucetta, who handled the advertising.

Thanks to all the advertisers who participated and made it all possible. We hope you got a good response and your business prospers.

Finally, thanks to those who helped with the bulk mailing: Greg Mierz, Tom Williams, Mike and Mary Lee Helton, Al Lancaster, Chuck Christensen, Brent and Betty Wilde, Michael Thompson, Lucetta and Cara Lightfoot, Joan Rodgers, Bill and Grace Muse, Byron Sanborn and Denny Organ. Lots of hands made quick work.

-David Lightfoot

Stalls

by Thomas B. Nast

Shortly before the eruption of Mt. Vesuvius, when I adopted my first BMW, what impressed me most was its engineering and attention to detail. While Detroit was perfecting the cup holder and crushed velour, BMW was putting in constant velocity joints and lock buttons that close flush with the door.

A lot of engineering has happened since those days, much of it evolutionary improvement (examples are toothed cam belts, Borg-Warner synchromesh and rocker arm design), more efficient to produce (such as crankshafts made of sintered steel instead of forgings), a response to governmental regulation (e.g. fuel injection), or long-overdue adaptation of the racing side's technology (four valves per cylinder is a good example). The most basic new engineering in the last twenty years (ABS aside, which BMW installs but did not develop) is the aluminum block used in the V-12 and water-cooled motorcycles, and the suspension links which started in the 7-series and have worked their way down the line. None of this moves earth the way Mt. Vesuvius did, of course, but neither is it anything to be ashamed of.

We hear from time to time about truly revolutionary engineering done by BMW, be we never see it. Two examples are multi-fuel engines and hydrogen fueled engines. Both are



cutting-edge explorations, particularly in automotive applications, but the laboratory door remains shut. So I have found I must turn elsewhere to get my technical funny bone tickled, and from time to time I will share some of my discoveries with like-thinking people.

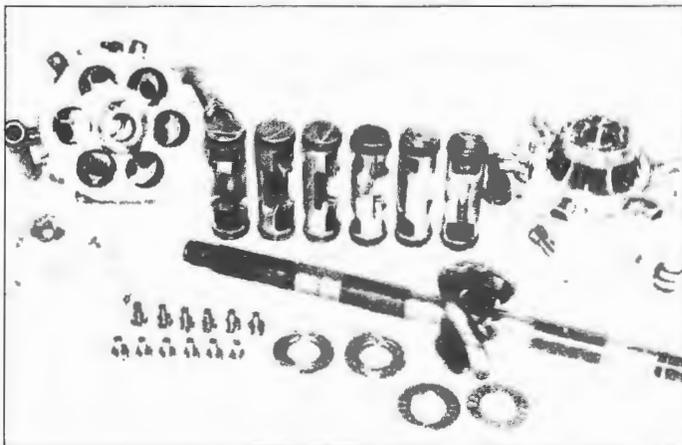
How about a six-cylinder, twelve-piston engine with no crankshaft, rods, valve cam, rocker arms or timing chains? Almost four years ago I ran into such an engine, and it was not just a set of drawings. The thing actually runs. It ticks over pretty slowly (maybe 2500 rpm max), has average horsepower (210 hp) and outrageous torque (about 70 ft. lbs. at 1200 rpm). With twelve pulses per engine revolution, it is butter-smooth. It is called the Dyna-

Cam, and the first working model was built before WWII broke out.

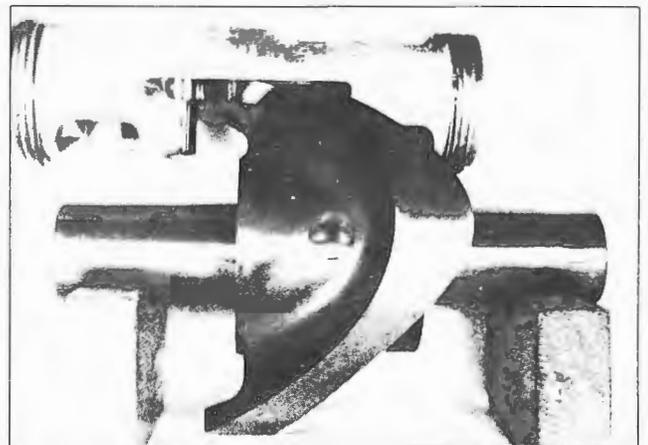
I will try to describe how it works, and hope that the accompanying pictures give further clues. The "block" is just a ring to guide the pistons, which are arranged like six large paper towel cylinders rubber-banded together. It also supports the cam, which is the center of the engine. Each piston has two heads and two sets of rings, one at each end. There is a cylinder head at each end of the engine, so there are twelve combustion chambers. The pistons shuttle back and forth, the rings never actually leaving the cylinder head.

Now the trick is getting the power from the pistons to a shaft, and that is done with a roller camshaft which is in the center of the engine (which is why the block must be in two halves). The pistons have lengthwise slots, with a roller at each end, into which the edge of the cam fits. As the pistons go back and forth, they force the cam around with the rollers minimizing friction and wear. A shaft fixed to the center of the cam transmits the power from the engine. As the shaft passes through the cast cylinder head, it rotates a metal disk which rotates above the valve/spring assemblies, bumping each open with each revolution.

The rights to this engine have passed through numerous hands over the years, with each new owner developing the

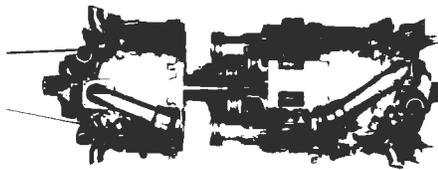


The parts count is quite low compared to a 325i.

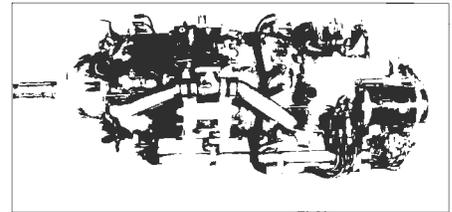


This detail shows the cam-piston

design a bit further. It has even flown in airplanes. Such an engine would not be too interesting in a sports car, but hook it up to an automatic or CVT (continuously variable transmission) and you would have trouble keeping the tires on the wheels. The engine is so small and light that it could be mounted in innovative places, too. For example, it could fit where the transmission now is installed, and with a shaft coming out of each end, could power electronically controlled gearboxes front and back for a perfectly balanced all wheel drive car with enormous space for passengers and cargo. Maybe Mazda, which exorcised the gremlins in the Wankel, would like another challenge?



An assembled Dyna-Cam with a cylinder head lifted.



This Dyna-Cam, with accessory case attached, needs only exhaust pipes before being fixed up.

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1991 Concours d'Elegance



Our biggest annual event, the Club Concours d'Elegance is almost here. The date is July 20th, Saturday. Cars to be judged must be present by 11:00 a.m. The place is the Chateau Ste. Michelle Winery in Woodinville.

The site is the grassy field next to the Winery. There is a nice picnic area. Pack a lunch and make it an outing for the whole family. One reminder: only Ste. Michelle wines may be consumed on the grounds. No other alcoholic beverages.

This is always a great event. Beautiful cars in a beautiful setting, friends, good food and wine and (usually) sunshine. It's a very pleasant day. Plan to attend.

Driving Directions

From I-405, north or south, take the 20B exit at Totem Lake. Head east for about two miles, down the hill past JB Instant Lawn and down to the light at the Woodinville-Redmond Road. Turn left and follow this road to the four way stop near the Hollywood School House and the Texaco station. Turn left. The winery is just across the valley on the left. When facing the winery, to the right, slightly up the hill from the main entrance, is a service road that leads to the Concours field. The service road is a long, narrow drive beneath a canopy of trees and past the old mansion.

Schedule:

9:30 - 11:00 Registration and final prep
 11:00 - 11:30 Hands off
 11:30 - 2:00 Judging by classes
 2:30 (approx.) Awards ceremony



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BMW's That Never Reached The Road

By David R. Lightfoot

One of the nice things that BMW of North America does for the club is that they treat us just like the big guys. That is, all the press releases that are sent to magazines like *Road and Track*, *Car and Driver*, and *Automobile* are also sent to your *Zündfolge* editors. Many of these press releases are very interesting, and we include them in *Zündfolge* when we think they would be of interest to our readers and space permits.

Recently we received a press release dealing with BMW prototypes that never went into production. This press release was unlike any I have ever seen before. It was quite elaborate, and its purpose, in the end, was to explain the photos of the much modified 8-series car that have been appearing in the automotive press. A photograph of this "M8" is on the cover this month. This press release went to great lengths to explain why this car and many other prototypes will never be offered to the public.

Many preproduction prototypes and design studies are created by two independent subsidiaries of BMW AG. These are BMW Motorsport, founded in 1972, and BMW Technik, founded in 1985. Both subsidiaries are permitted to "offer alternatives, additional products or technical solutions, and those which compete with the parent company's products if circumstances permit." Further definition is given, "Alternatives are projects of a kind which BMW AG could tackle but is unable to. Competing means undertaking projects with the same objectives as the parent company, but of such significance as to call for a genuine choice to be made."

The first project by BMW Technik was the Z1. This car was never intended for production, but BMW relented when customer demand proved great. The Z1 went out of production in May, after 8,000 had been built. The Z1 did



wonders for BMW's image, and also was the test bed for the new rear suspension layout, which is now being offered in the new 3-series.

BMW Motorsport has produced its own cars for many years. Its first production vehicle was the M1. When the M1 went out of production, its motor was put into a 6-series, and the M635 was created. Later, Motorsport developed the M3 and M6, which are built on the regular production line. On the other hand, the M5 was not only engineered by Motorsport, but it is hand built in Motorsport's own facilities. The only other car actually built by Motorsport is the M3 cabriolet, which is not offered in North America.

Both BMW Technik and BMW Motorsport also build prototypes for the parent company. One such prototype was a Z1 Touring, with four wheel drive. Fortunately this car will never be put into production. This ugly little beast looked like an AMC Gremlin in drag. A more desirable prototype vehicle was created while the 850i was under development, to test the V-12 in a coupe body. The five liter V-12 was slipped into a 635 body and quickly became the scourge of the German autobahn.

Another tantalizing prototype that never reached the light of day was an M5 Cabrio. This car was fully developed and ready to be introduced at the Geneva Auto Show. At the last minute it was pulled from the show because it was feared that it would steal customers from the 3-series Cabriolet. BMW also considered an M3 Touring, the

world's fastest grocery-getter. An M3 engine was slipped into the regular 3-series Touring body, and it was tested on the public roads. The car was capable of 155 miles an hour.

This press release also talks about a prototype which most BMW enthusiasts would die for. This was an M3 powered by the M5's 315 horsepower engine. BMW AG reports that the car was significantly faster than your average Ferrari or Porsche Turbo. The head development engineer said that it was the first car that they had built that the technicians did not complain about a lack of power. BMW said they would not build the car out of a sense of responsibility.

The main subject of the press release was the M8 prototype. This 8-series with fender flares and modified nose has been tested with a variety of V-12 engines. Some of these have had four and five valve cylinder heads, and four overhead camshafts. Horsepower figures have reached 550. Weight was reduced by using Kevlar components and sliding plastic windows. Aerodynamics were improved over the standard 850i. Motorsport wanted to lay down a short production run of the M8, which would have a top speed of about 180 mph. But the ever-conservative BMW AG board would not approve the car. BMW's research and development director, Dr. Wolfgang Reitzele said "We just aren't interested anymore in putting our name to cars like these. Our tasks for the future lie in quite a different direction." More's the pity.

Skip Barber Racing School Comes To SIR

By David R. Lightfoot

The Skip Barber three-day competition driving school is being offered at Seattle National Raceway for the first time this summer. Driving events Chairman Gary Parr and I took the course during June. This is a racing school and is designed for people who intend to start campaigning their own car, although a lot of people take the course just for the fun of it. It is more advanced than a high performance driving school.

The school is taught in formula Fords which are supplied by Barber. A formula Ford is an open wheel race car. These are \$25,000 cars hand-built in England. The engines are 1.6 liter Ford Cortina push rod engines that develop 110 horsepower. This is more than sufficient in a car that weighs only 980 lbs. Goodyear Gatorback street tires are used.

The first day of the three-day course began with an extensive chalk talk. After reviewing the theory of competitive driving we went and got familiar with the cars. We were shown how to get in the cars, which is harder than it would seem, how to belt up the five-piece competition belt, how to start the cars and how to work the gear shift. In order to get comfortable with the cars we ran a small slalom course. The second step was to then lift off the throttle at the third cone in the slalom. This showed the car's tendency for trailing throttle over steer. We practiced recovery from the oversteer.

Since racing cars have non-synchronized gear boxes, the ability to heel and toe double-clutch downshift is essential. We practiced this skill on the straightway going back and forth. Later in the afternoon we took van rides around the full track with the instructors pointing out the braking points, corner entry, apex and trackout points and other significant features. We were then allowed to drive the full track, but with a 3,000 rpm limit. Later this was raised to 3,500 rpm.

On the second day of the school we were allowed to continue lapping at progressively higher speeds. At one point I got my car very sideways in turn two but was able to recover. The important thing with a formula Ford is

that you never lift off the throttle in the middle of a turn. The trailing throttle oversteer will insure that you at least spin, if not go off the track backwards. By keeping your foot in the throttle and steering most slides can be recovered from. It's a lot of fun.

Then we went into a four-phase braking exercise. The first phase was to brake hard enough in a straight line to lock up the tires just to see what it felt like. The second phase was to brake in a straight line at the threshold of adhesion and get the car stopped as quickly as possible without locking up the brakes. In the third phase we then did straight line braking and transitioned into trail braking, coming to a full stop. The fourth and final phase was to brake in a straight line, then trail brake and then transition back to the gas in the corner. We did this at progressively higher speeds in turn 3-A. The speeds we were told to use were very aggressive and I found it impossible to achieve the maximum speed they wanted to and still make it through the corner. Virtually everyone in the class spun the cars.

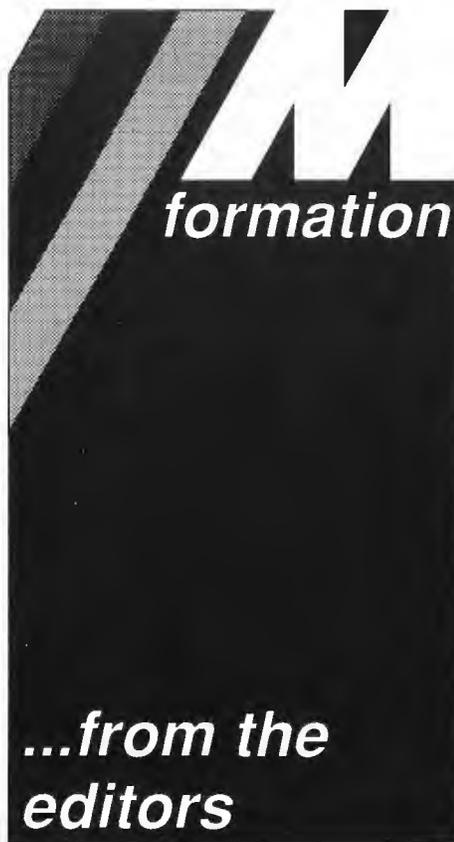
On the third day of the school we finally were going to get to do some more full track lapping at higher speeds. Unfortunately, it was raining buckets on the morning of our final day. The mechanics adjusted the sway bars and springs in the cars to soften up the suspensions. Still, it was like we had been given an additional 200 hp. The cars were very skittish in the wet. It was good practice because smoothness is key, but it just wasn't as much fun as driving in the dry. The rain also led to a chalk talk on changes in technique for driving in the rain. Up to this point the technical discussions had been excellent, however, the rain discussion was rather poor. This is probably due to the fact that the instructors were from California and had little rain experience. For instance, we were told that tire inflation pressure should be increased for driving in the rain. Anyone who has driven at SIR in the rain knows that tire pressure needs to be decreased for the wet. We were also told that the reason slicks worked better than rain tires in the dry is that slicks put more

rubber on the road. This is a common myth that I was surprised to see repeated here. Slicks do not put more rubber on the road but they do change the shape of the contact patch.

In the afternoon the rain quit and the track began to dry out. For the last hour and a half the track was relatively dry and finally they allowed us to do uninterrupted full laps without stopping at start/finish. This was the most fun of the three days. We finally could drive continuous laps at high speeds and even were allowed to do a little passing. We also were quite familiar with the cars at this point and were able to push their limits. The performance of a formula Ford is really quite amazing. The acceleration and braking are both tremendous, but it is the cornering forces that are the most fun. While a street BMW is good for only about .7 g's, a formula Ford on street tires will do about 1.3 g's. It's really a fabulous experience and I recommend it.

Overall the school was quite good. I wish we would have been given more time to do full laps and of course I wish it hadn't rained on the last day. The school also highlighted what a tremendous value our club school is. Once you have been to two or three of our club schools and want to step up, the Skip Barber Three-day Competition Course would be an excellent choice. Several people in the class had not been to a high performance driving school previously and I think they were a little overwhelmed. You really should attend a few schools in your street car to get the most out of a school in racing cars. Also, it's very helpful if you can perform a heel and toe double-clutch downshift prior to arriving at the school.

The Skip Barber Three-day Competition Course will be offered two more times this summer at Seattle International Raceway. First on July 16, 17 and 18, and also on August 20, 21, and 22. The price for the three-day school is \$1,850. Anyone interested in more information about this school is urged to contact either myself or Gary Parr.



formation

...from the editors

There's been no decision yet on bringing the new 5-series Touring (wagon) to the U.S. but rumors say late next year the car will come to America. As reported last month, it's likely to be offered as both a 520i and 525i. Later an all wheel drive 535ix may be offered and perhaps a V-8 version (540i?) (*Autoweek*)

This year BMW and Mercedes will introduce the first cars using a non-ozone depleting refrigerant. Other makes will follow starting in 1993 with the aim to have all vehicles converted by 1996. (*Autoweek*)

Confirmed: the new BMW M3, which will use the two-door body of the new 3-series, will be powered by a 24 valve six cylinder engine producing 250 horsepower. (*Car & Driver*)

BMW's airbag replacement cost of \$2,500 - \$2,600 is the highest of any manufacturer. (*Autoweek*)

The rumor mill says Chrysler may be planning to sell Lamborghini. Well placed sources in Europe say the buyer may be BMW. BMW previously collaborated with Lambo on the M1. (*Car & Driver*)

BMW's newest assembly plant, in Regensburg, has put on a second shift to build more 3-series cabriolets, tourings and ix models. By December '91 the goal is to produce 720 cars per day. (*Roundel*)

From *Autoweek*, in the OUT TAKES column on page 10 of the May 27 issue:

"Quite possibly their last motorsports press release. The PR guys for the Milwaukee Indycar race sent out a press release announcing an Alfa Romeo will be this year's pace car . . . only the spelled Alfa 'Alpha.' Which could be their Omega."

Interestingly enough this pious reporting was preceded two pages earlier by an ad for a future issue of their own rag featuring several cars including an *Alpha* Romeo. Expect an item on British Motor Works any issue. (Submitted by Ted Rodgers)

BMW's 3-series and 5-series are among 57 "recommended models" in *Consumer Reports'* annual auto issue. (*Roundel*)

BMW is expected to announce its involvement in a new one make, single-seater racing series which will debut in Germany in '91. (*Autoweek*)

Brake Tech Session

An owner's hands-on brake tech session is scheduled for Sunday July 28. It will take place between the hours of 10 a.m. and 2 p.m. at Autosport Seattle, 2121 Westlake N., phone 621-1940. Due to limited space, reservations for 20 cars will be accepted on a first come, first served basis by Thomas Nast at 622-5863.

Attendees should have the appropriate work clothes, and gloves if needed, to remove wheels, inspect brake components, remove brake fluid, and if necessary, replace brake linings.

Parts are available at Autosport Seattle (make arrangements in advance) or bring your own. For further information call Thomas Nast at 622-5863 or Chuck Christensen at 784-4496.



What's this? A 528iLLL? This tasteful conversion of a 5-series into a six door was spotted in Surrey, B.C. by member Jim Kamp.

Alpina has just released its version of the Z1 roadster. Featured are traditional Alpina spoke wheels and a 200hp 2.7 liter engine. (*Roundel*)

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Classified Marketplace

For Sale: Corona HD computer (clone of the IBM PC-XT), running at 4.77MHz, with 512Kb RAM, amber monochrome monitor, and Keytronic KB5151 enhanced keyboard. All original Corona manuals are available. 20MB 60Ms hard disk, with a standard Winchester MFM controller (the original was unique to Corona). The system has a motherboard problem: it always thinks there is a keyboard error when the system is turned on. If you want to repair it (technical manual can be yours for the cost to xerox); or just use the keyboard, disk, case, RAM, and power supply, and add your own motherboard; it's yours for the bargain price of \$100. (The hard disk alone is worth more than that!)

Genuine Hayes 1200B internal modem, with docs; fits any IBM PC or compatible. \$25

Genuine Intel Above Board, with docs. Contains 128Kb, for filling a 512K machine to 640Kb. \$70

Or take the whole setup off our hands for \$150.

Call Tom Cox at 823-5048.

For Sale: 2002tii balanced and blue-printed block, reworked head, misc drive and interior parts. \$1000 for all or make offer. Mac tool box \$200. 246-9947.

For Sale: 2002 stuff: Webers, wheels, tires, seats, motors, trannies, tii struts and injection, ltd. slip diff, half shafts, wiper motors, starters, etc. 320i stuff: wheels, motors, injection, euro-323i rear disk brakes, 4 speed. 6 Cylinder stuff: wheels, tires, 4-barrel manifold with or without Holley, 4 & 5 speeds. Bill Proud 824-8242 eves.

Wanted: Seattle couple wants an early 633 or 635, 5 speed or automatic, in good condition. 784-9001.

For Sale: '76 2002, nearly stock, rust free daily driver. 30k on rebuilt motor. Needs paint. Offer? '74 3.0S luxobarge. Power everything. Rebuilt automatic. 80k miles. Leather interior. Offer? Five 2002s parting/restoration. \$500 and up. Bill Proud 824-8242 eves.

Wanted: BMW 700 parts: front fenders, floor pan sections, rocker panels, tail lights, door handles, and other body trim. Jim Kamp. 604-727-3672.

For Sale: 318i Getrag 5 speed. Overhauled with \$900 in genuine BMW parts. \$800 OBO. Installation available. Call Greg at 833-8161, 7 am to 5 pm.

For Sale: 1974 BMW 2002. Immaculate car for sale. Rebuilt engine, excellent body (silver) and interior, mag wheels, recent brakes and front end work, sunroof, new radio/cassette, full gauges. Asking \$4950. Call 783-9618.

For Sale: 1977 copper colored 320i, exceptional condition, recent Bimmers Only engine rebuild, sunroof, Recaros, new tires and brakes. Strong, must see to appreciate. Owner in military, gone 3 years. \$5,000 OBO. 659-9558 after 6 p.m.

For Sale: Wheels from '86 325 with Pirelli P6 195/65R14 89H tires, 3000 miles on set of 4, \$1100.00 or best offer. 271-8201.

For Sale: 1978 BMW 530i, exceptional condition. Completely rebuilt motor has 29,000 miles. 3 speed auto., air conditioning, power windows, sunroof, locks, cruise control, Blaupunkt stereo. Pirelli tires. Interior excellent condition. Complete records. Asking \$6500. 282-9778 or 789-2337. Joe or Bob.

For Sale: Craftsman 2 speed electric buffer-polisher, model #315.10670. Double insulated. Like new; used only a few times. Comes with 4 polishing bonnets, 2 buffing bonnets, and carrying case. \$25.00. Marshall Welch, 522-4438 (can leave message).

For Sale: 1983 BMW 320i in mint condition both inside and out. Only 71,000 miles on this original owner car. 5 speed, new tires, sunroof, and Blaupunkt stereo. Bahama Beige with gold pinstripes. All service records available. Asking \$8200. For further information, please call Mark collect at (503) 635-8080 days & evenings.

For Sale: 7 series auto tranny, brand new (not rebuilt), never installed, still in crate, 32mm input shaft is the only factor determining if it will fit any 7 series up to '85, both U.S. and Euro. No room to store anymore, \$300.00 or best offer. Must sell. Model #731125/3HP22-ZF. 547-2164.

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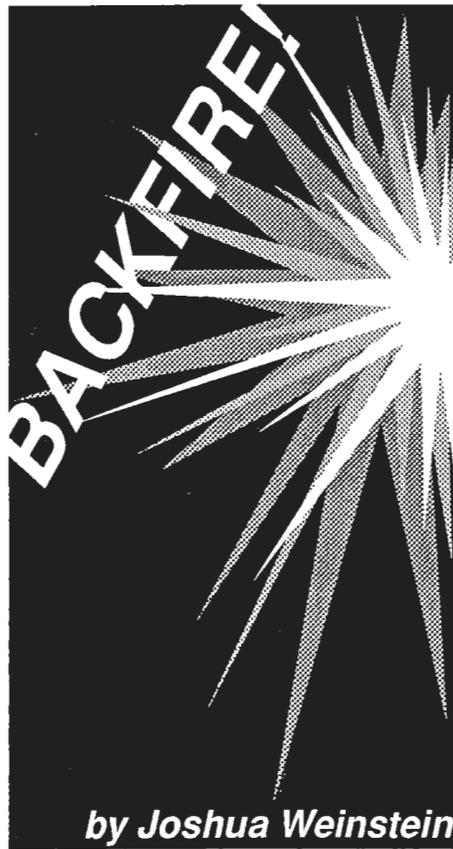
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BMW has recently cut the M-20 motor. This is the "small six" that was in numerous European cars and the 325e/525e and 325i/525i here. BMW built the motor in the late 1970s; it was designed to fill the gap between the trusty four and big six. It first saw duty in Europe in the 320i-6 and 323i in 1977. We didn't get it until the 325e came out in 1985. It was nice to have a small six to fit in the 3 series, but the motor was flawed. Apparently even BMW thought so since they recently redesigned the motor.

The first flaw was BMW's apparent attempt to lose weight and noise. To do so, they followed the lead of most car companies and installed a belt to drive the cam shaft. Both the four and the big six use chains. Chains are stronger and almost never wear out or break. Belts, when built right, are flexible, quiet, light weight and almost as durable. BMW, however, forgot to make the belt right. You almost never have to replace a Volkswagen's belt, but BMW's must be replaced after 40,000 miles. Failure to do so results in about \$2,000 to \$3,000 of damage to the head and valves. And the belts break without warning. Not a good situation. Apparently BMW agreed and, even though the replacement belts are much stronger and seem to last much longer (time will tell), when BMW redesigned the 2.5 liter six and made it a 24 valve motor, they put that pesky chain back in to drive the cams.

Why they gave up on the belts is almost as puzzling as why they gave up on the chains. The chain's flaws were noise and weight, the belts strength. The belt's flaws were durability and, apparently, BMW's apprehension to put them in true performance motors, the chain's strength. However, Volkswagen and most Japanese cars employ very durable belts. And Ferrari uses a belt in the 32 valved dual turbo-charged mega-horsepowered 1985 288GTO, as well as every other V-8 they've made. If that's not a high performance motor,



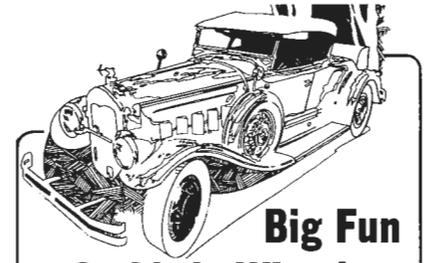
nothing is.

It also took about 2 years of design development to make the M-20's aluminum head resistant to cracking. Unfortunately, it was two years after they began selling the motor. But, BMW does that with almost every motor they sell (at least of the six cylinder variety). In the "eta", or 2.7 liter versions, the sixth cylinder also tends to warp, from what I've been told. Supposedly the transmission bolt holes are too close to the last cylinder. Then, when they get hot, the weight from the tranny pulls the cylinder back and warps them. That's what I've been told. It may be true, even. And, of course, another reason to start a new motor development is to get as far away from the "eta" concept motor. Besides wearing out at 60,000 miles (unheard of for prior and hopefully future BMWs) and having no - or maybe just low - horsepower, the "eta" was almost drivable.

The new 2.5 should be a great motor. Chain cam drives. Twenty-four valves. A 250 horsepower M-3 version. It adds up to the best new BMW motor in 20 years. Even with two years of head cracking. Of course this is only the second new BMW motor in 20 years, unless you count the "new" 1.8 liter four. The 1.8 liter four has a new

designation number and technically is re-designed, but it's still the same old motor. The 2.5, on the other hand, has twice as many valves and a chain not a belt.

What's going to really cook is the M-3. We can debate the virtues of the new 3-series body style all day long (though it won't take me long to say "ugly"), but I look forward to seeing what BMW MotorSport can do re-shaping the thing and stuffing a nice smooth 2.5 six with 4 valves per cylinder. It's almost enough to make me think I want to buy a new M-3. Almost. Then I remember that I can't afford a new 318is.



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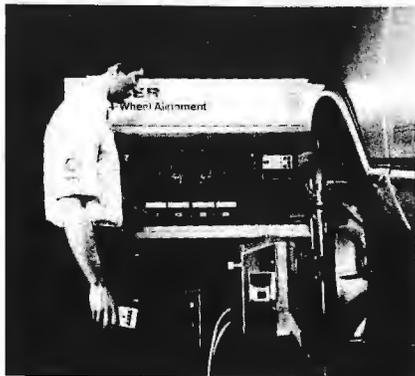


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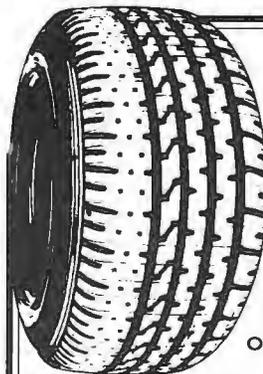
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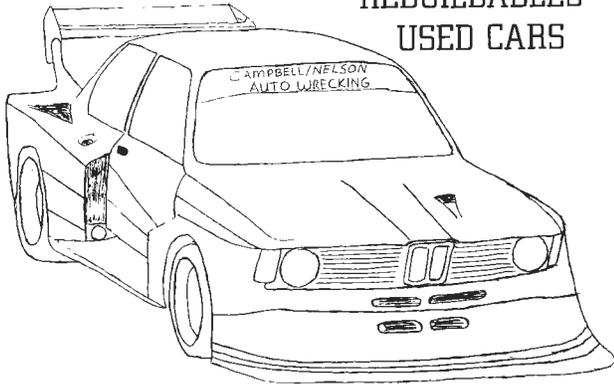
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