

1984 Midwest Clinic Program

Theme: Looking Back to Move Us Forward

December 12th, 1984

Morning Moderator — Roger Stewart

9:30	Opening Remarks
	Joe Williamson, CGCS, Pres. MAGCS
9:45-10:15	Keynote Address
	James Timmerman, CGCS, Pres. GCSAA
10:15-10:30	"History of the Midwest Clinic"
	John Ebel, Golf Course Superintendent, Barrington Hills Country Club
10:30-10:45	"A Look Back at His First Year as a Supt."
	Steve Biggers, Golf Course Superintendent, Woodmar Country Club
10:45-11:00	Break
10:00-11:15	"Budgeting"
	Rick Kroeger, Golf Course Superintendent, Forest Hills Country Club
11:15-11:30	"Tree Usage on the Golf Course"
	Sean Daley, Golf Course Superintendent, Ridge Country Club
11:30-11:45	"Flowers"
	Bill Roberts, CGCS, Golf Course Superintendent, Sentry World, Wis.
11:45-12:00	Lunch and Trade Show

Afternoon Moderator — Dudley Smith

2:00-2:20	Awards Presentation
2:20-2:40	"Laws and Regulations"
	Dewight Dunbar, Member Service Director of the Ill. Fertilizer and Chemical Association, Inc.
2:40-3:00	"State of the Seed Industry"
	Art Wick, Product Manager Fertilizer and Turf Seed, Lesco, Inc.
3:00-3:15	Break

Poa annua Eradication Symposium

3:15-3:30	"Using Embark in Combination with Cultural Practices — Peter Leuzinger, CGCS, Golf Course Supt. St. Charles Country Club
3:30-3:50	"Use of Endothal and Linuron" Jim Evans, Golf Course Superintendent Turnberry Country Club
3:50-4:10	"Use of EL 500" John Morris, CGCS, Golf Course Superintendent Highland Golf and Country Club
4:10-4:30	"Use of Tri-Calcium Arsenate" Cecil Kerr, Regional Representative Mallinckodt, Inc.
4:30-4:45	Questions and Answers

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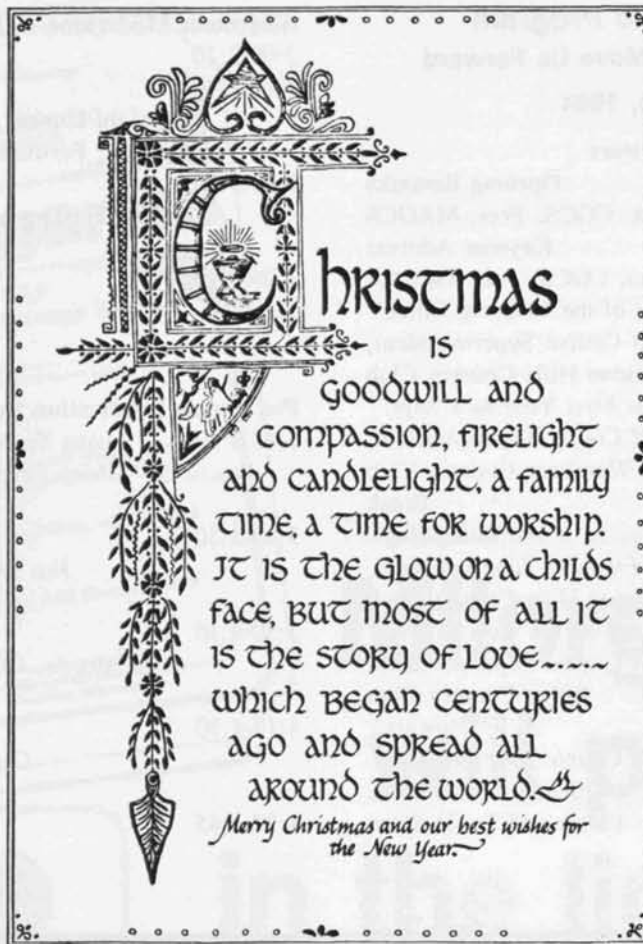
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Upcoming Events — Mark Your Calendar

December 11th-12th-13th — North Central Turfgrass Exposition at O'Hare Exposition Center

December 11th — The 25th Annual Illinois Turfgrass Conference

December 12th — The 32nd Annual Midwest Clinic

December 13th — The Central Illinois Clinic & USGA Green Section. Registration for all three days starts at 8 a.m.

January 7th & 8th, 1985 — GCSAA Seminars at Pheasant Run C.C., St. Charles Insect Identification & Control by Dr. Harry Niemczyk and Golf Course Design Principles by Geoffrey Cornish and Robert Muir Graves. Registration fee will be \$75.00 to GCSAA members.

January 18th-20th — Mid-Am Horticultural Trade Show at Hyatt Regency, Chicago

February 6th — Prayer Breakfast, Sheraton Washington Hotel, D.C. & GCSAA International Golf Course Conference & Show

For those of you who didn't make the annual meeting held on November 7th, (and that means about 85% of you, since only 46 voting members showed) the following have been elected by a few to lead the many:

President..... Joe Williamson
 1st Vice Pres..... Dave Behrman
 2nd Vice Pres..... Julius Albaugh
 Secretary/Treasurer..... David Meyer
 Directors (2 year term)..... Phil Taylor & Mike Nass

Brad Anderson — Congratulations — Brad who served as assistant superintendent to Ed Fischer at Old Elm has moved into the Superintendents job at Canton C.C. in Canton, IL. Brad started his new position on November 15, 1984.

Roger Stewart has completed converting all of his fairways to bent this past fall. He has been in a program for a couple of years of killing them with Round-Up and re-seeding with Penneagle. His project now is having a 3 foot high barrier wall built along 1st Avenue since the club lost property due to the widening of 1st Avenue. On the club side the wall will be bermed and landscaped.

Just about everyone you talk to has been crying in his beer due to the fall weather. At least all of the guys that had projects they wanted to do are doing the crying. It sure wasn't the year to plan to move any soil for it has never dried out enough to really get anything done. Maybe next year ...?

Pete Leuzinger, St. Charles C.C. has a F-20 for sale. It is a 1973 model in excellent condition with 6 blade reels — give him a call at 312-584-3403.



The election committee headed by Ed Stewart and helped by Ed Fischer, Bob Breen, Penny Meyer and John Ebel.



Out-going President Roger Stewart handing the gavel to incoming President Joe Williamson.



Newly elected Board of Directors, front row, left to right: Dave Behrman, Vice President; Joe Williamson, President; Julius Albaugh, 2nd V.P.; Dave Meyer, Secretary/Treasurer. Back row, left to right: Penny Meyer, Executive Secretary; Roger Stewart, President Emeritus; Sean Daley, Mike Hart, Jim Evans, Mike Nass and not in the picture Phil Taylor; all Directors.

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Sprayer calibration to lower job costs

by James Fizzell
Senior Extension Adviser

Calibration!

Calibration! Probably few things are more distasteful to people who apply agricultural chemicals. Yet calibration is important. Chemicals need to be properly applied to do the intended job, without damaging desirable plants and animals in the vicinity, and without wasting increasingly expensive materials.

Still, I suspect that most landscapers could get away with ignoring calibration if it were not for the fact that you have to answer the calibration questions on the pesticide exam. While there are many scientific principles involved in calibration, it is mostly just common sense. And once you make up your mind that you have to do it, calibration isn't so difficult after all. Many kinds of equipment are used to apply pesticides to landscapes and turf. Commonly used are manually operated sprayers of various types, power sprayers, mist blowers and granular applicators.

Granular applicators

Granular applicators are mostly used on turf, but cyclone spreaders are used under certain conditions in landscape plantings. Drop spreaders are more precise and reduce drift, cyclone spreaders are less accurate, but cover a much larger area with each pass.

Manufacturers provide recommended settings for applying various products with their spreaders. These recommendations are usually accurate, but there are differences in materials and in the way each operator uses the spreader. Also, as the equipment wears, settings change.

Granular applicators should be calibrated at the beginning of each season and regularly throughout the season.

One of the easiest ways to calibrate them is to fill the hopper with a measured amount of the material to be applied. Set the spreader on the opening suggested by the manufacturer and apply the material to a measured area, such as 1,000 square feet. (10' x 100', 20' x 50', 32' x 32', etc.) Weigh the remaining material in the spreader to find the actual amount spread. Adjust the setting if necessary.

Or, suspend a tray beneath the spreader to collect the material deposited as the spreader is pushed a measured distance at the proper speed.

A third method might be to walk an empty spreader over a measured area, noting the number of revolutions made by the wheel. Support the spreader so the wheel can be turned by hand. Fill the hopper, then spin the drive wheel at the same speed and for the same number of revolutions, while collecting the granules. This system avoids misapplication on turf areas and allows reuse of the granules.

It is essential that granular applicators be calibrated using the material to be spread. Since each operator will walk at a different speed, and hold the spreader at a different angle, the intended operator should perform each test.

Manual sprayers

Manual sprayers are used on turf and small ornamentals. To calibrate them for applying pesticides to ornamentals, simply add the recommended amount of concentrate to the correct amount of water in the sprayer, and spray the foliage to the point of run-off.

Spot spraying of small turf areas can be handled in the same manner.

For larger turf areas, practice spraying a measured area with water. When you are able to make a uniform application, fill the tank and spray the area. Measure the amount of water needed to refill the tank. That amount is the rate applied to the measured area. For instance, if it takes 1½ gallons to refill the tank after spraying 1,000 square feet, the rate is 1½ gallons per 1,000. The correct amount of chemical for 1,000 square feet of area, mixed in each 1½ gallons of water and applied as above, will result in the proper application rate.

Power sprayers

Power sprayers most commonly used in the landscape industry are hand-held guns.

Hydraulic sprayers for applying pesticides to trees and shrubs operate at high pressures to provide thorough coverage of leaves, stems and trunks.

Hollow-cone nozzles provide the best coverage for smaller plants.

Large droplets at high pressure are needed to reach the tops of tall trees. Distance increases only slightly by increasing pressures above 400 psi because the spray becomes atomized. When vertical reach becomes a problem, use a higher volume nozzle with a narrower spray pattern instead of increasing pressure.

Label directions for the use of pesticides on trees and shrubs will specify the amount of material to mix per 100 gallons of spray. Apply to the point of run-off to assure thorough coverage.

Many kinds of spray equipment are used for turf, including hand-held booms, tractor-mounted booms and guns.

Various kinds of nozzles are employed, each with its advantages. For turf applications, the plastic low-pressure gun has become the standard. Wide-angle solid-cone nozzles are used, delivering 2½ to 4 gallons per minute. Uniform application with this kind of equipment requires skill on the part of the applicator, in addition to careful calibration. Both the speed of the operator and the delivery rate of the equipment should be considered.

Calibrate by clocking the applicator as he sprays a pre-measured area with water. Repeat this several times to establish an average.

Then, run a bucket test on the equipment. Measure the amount of spray the equipment delivers in a given time. If you are using a 4 gpm (gallon per minute) nozzle, it should fill a 4-gallon container in one minute. If not, adjust the pressure slightly or change nozzles.

Multiply the *time in minutes* the applicator takes to spray the 1,000 square feet by *gallons per minute* the equipment delivers to find the rate per 1,000 square feet.

Example: 1.25 minutes to spray 1,000 sq. ft. times 4 gallons per minute equals 5 gallons per 1,000 sq. ft.

Once the system is adjusted, run a bucket test before the start of each day, and again during the day, to make sure the equipment is functioning correctly. Remember, nozzles wear or become plugged; equipment goes out of adjustment.

By knowing the gallons of spray delivered per 1,000 square feet, it is easy to compute the area that can be covered by a tankful of spray.

Divide the *gallons in the tank* by the *gallons per 1,000 square feet* to find the 1,000's of square feet per tank ...

Example: 400 gallons per tank

5 gallons per 1,000 square feet equals 80 x 1,000 square feet per tank.

Conversely, if you know the area to be sprayed, you can find out the gallons of spray needed.

Example: 50 (000) sq. ft. to be sprayed times 5 gallons per 1,000 sq. ft. equals 250 gallons of spray needed.

Deciding how much chemical to put into the tank creates several problems. In the landscape industry, areas are usually determined in thousands of square feet. But labels often specify amounts to be applied per acres.

To convert *pounds per acre* to *ounces per 1,000 square feet*, multiply by 0.37.

Example: 4 pounds per acre times 37 equals 1.48 ounces per 1,000 sq. ft.

To convert *quarts per acre* to *ounces per 1,000 square feet*, multiply by 7.3.

Example: 2 quarts per acre times .73 equals 1.46 ounces per 1,000 sq. ft. In either case, roughly 1½ ounces of material is needed per 1,000 square feet, which is reasonable since a quart weighs 2 pounds.

Another problem occurs when recommendations specify application in pounds A.I.A. This verbal shorthand means "active ingredient per acre". Since some chemicals are available in many formulations, this recommendation assumes the applicator will mix the material correctly.

Malathion is formulated as 25WP, 50%EC and 4E, etc. The 25WP, 50%EC and 57%EC refer to the percent of active ingredient by weight; therefore 4E indicates 4 pounds of active ingredient per gallon.

If the recommendation calls for 4 pounds malathion A.I.A., and you are applying 50%EC on a small lawn, you can easily convert to ounces per 1,000 square feet using the method already

(cont'd. on p. 18)

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James M. Latham, Jr. Named Green Section Director, North-Central Region

FAR HILLS, N.J. — James M. Latham, Jr., of Fox Point, WI, has been named Director of the North-Central Region of the United States Golf Association Green Section.

Latham, whose appointment is effective Dec. 1, will replace Stanley J. Zontek, who will become Director of the Mid-Atlantic Region, replacing William G. Buchanan. Latham will be based in Fox Point, WI, and will be responsible for Turf Advisory Service visits to USGA Member clubs and courses in the states of Iowa, Illinois, Indiana, Michigan, Minnesota and Wisconsin.

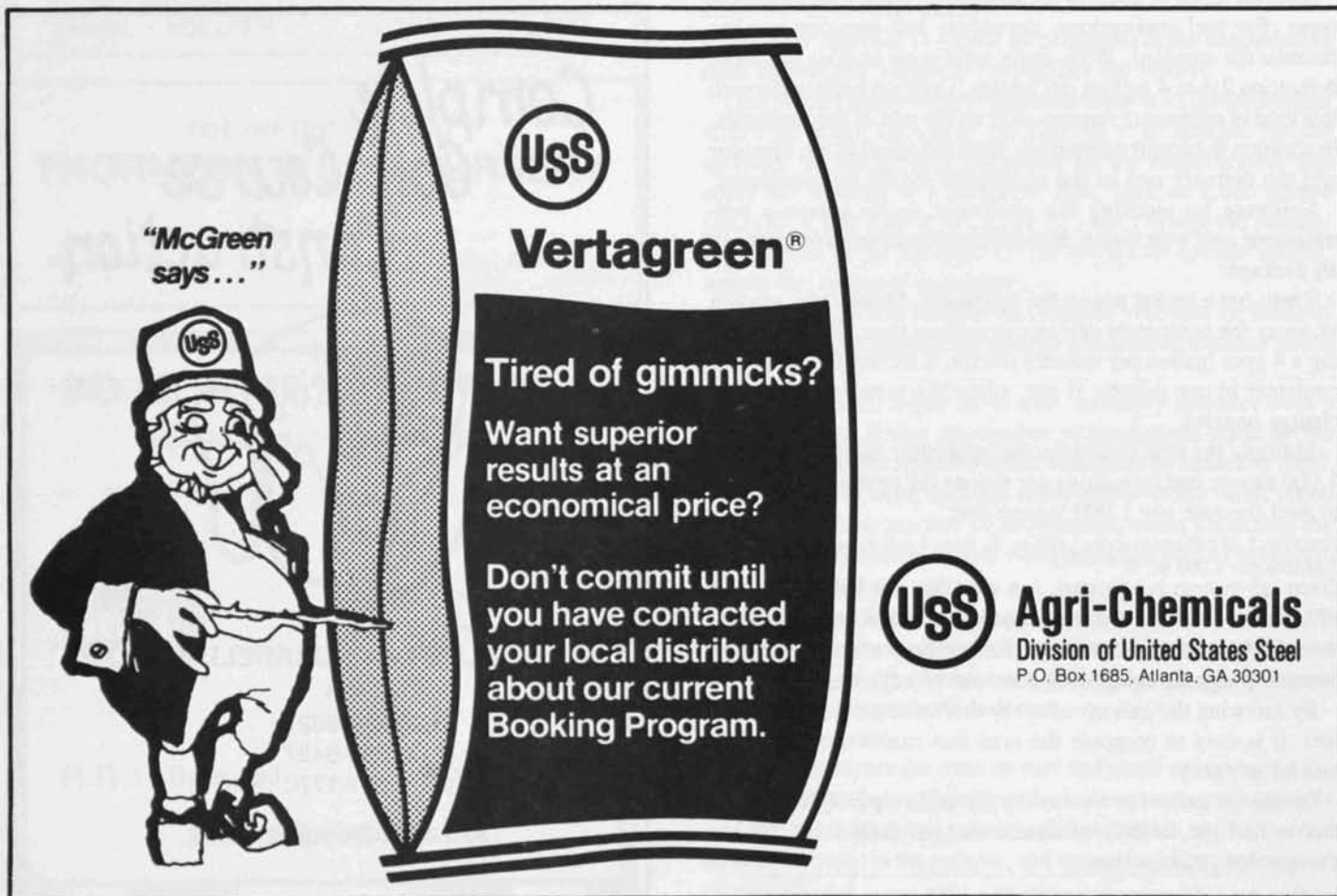
Born in Hillsboro, TX, Latham was graduated from Texas A&M College in 1952 and received a Master of Science in Agronomy from Texas A&M in 1954 before additional graduate study at Rutgers University. He is presently Manager, Agronomy and Promotion, for the Milwaukee Metropolitan Sewerage District.

He served on the USGA Green Section as the Northeastern Agronomist in 1956 and the Southeastern Agronomist from 1957 through 1960. He joined the Milwaukee Metropolitan Sewerage District as chief field agronomist in 1960 and served in that capacity until 1978, when he was named manager of Marketing and Agronomy.

Created in 1920, the USGA Green Section is a scientific agency dedicated to improving the playing conditions of golf courses in the United States.

ATTITUDE

It's a funny thing but true,
The folks you don't like, don't like you.
I don't know why this should be so
But just the same I always know,
That when I'm sour, friends are few,
When I'm friendly, folks are too.
I sometimes get up in the morn,
Awishin' I was never born,
And then I make cross remarks, a few,
And then my family wishes, too,
That I had gone some other place,
But then I change my little tune,
And sing and smile,
And then the folks around me sing and smile.
I guess it was catching all the while.
It's a funny thing but true,
The folks you like, sure like you.



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(Sprayer Calibration cont'.d)

given (4 x .37 equals 1.48 ounces). But ... the material you are using is only half active. So you know you need more ... how much more?

Divide 1.00 percent by the percent active ingredient to see how many times more material you will need.

Example: 1.00 percent

.50 percent active ingredient equals 2 times more

So,

1.48 ounces times 2 equals 2.96 ounces or roughly 3 ounces per 1,000 square feet.

Using the 4E material, you can find how many times more material you will need by dividing 8, which is roughly the number of pounds per gallon by the pounds active material.

Example: 8 pounds per gallon

4 pounds active ingredient equals 2 times more material.

We have been discussing application using hand-held guns. The same principles apply to boom sprayers with multiple nozzles.

Determine output by bucket testing each nozzle on the boom. The output of the nozzles should vary less than ten percent. The total of all nozzles is the delivered gallons per minute.

Since a boom sprays a specific swath, application is more precise than with a gun.

To calculate coverage, measure the swath width in feet. Divide 1,000 by that number to find length of pass 1,000 square feet.

Example: 1,000

4 foot swath width equals 250 square feet.

Each pass of 250 feet covers 1,000 square feet. If the turf area is 125 feet long, two passes equals 1,000 square feet, and so forth.

Calculate the time in minutes it takes to cover the 1,000 square feet, and multiply by the gallons delivered per minute to find gallons per 1,000 square feet.

Example: .5 gallons per minute output times 2 minutes to spray 1,000 sq. ft. equals 1 gallon per 1,000 sq. ft.

The output of nozzles can be increased by increasing pressure, but this is not a good system for large increases. To double the output, it takes four times as much pressure, not twice as much, as is commonly thought, it is better to change nozzles.

Mist blowers

Mist blowers are the most sophisticated application equipment used in the landscape industry, and are the most complex to calibrate. The chemicals are mixed in mist blowers with very little water and applied at a low volume, using a blast of air to propel the spray. Calibration involves nozzle output, cubic feet of air delivered per minute by the blower, volume of the target tree, and concentration of chemical in the spray.

You determine the total nozzle output in gallons per minute by bucket test. Assume, for the purposes of this example, an output of 6 gallons per minute. The volume of air is constant for a given piece of equipment, often 25,000 to 100,000 cubic feet per minute. Assume this equipment delivers 50,000 CFM.

Adequate coverage of a tree means replacing the air in the tree with air containing the chemical. To do this, you need to determine the volume of the crown of the tree. If it is considered a cylinder, the volume is equal to the area of the circle under the tree, times the height of the crown. The area of the circle is the radius (1/2 the diameter) squared, times 3.14.

To find the area under tree (radius squared x 3.14), see the following example:

(cont'd. p. 20)

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12.5 feet times 12.5 feet equals 156.25 feet
156.25 feet times 3.14 equals 490 square feet under tree
Then, multiply by the height of the tree:

490 square feet times 50 feet tall equals 24,500 cubic feet

To find out how long it takes your blower to displace the volume of the tree, divide the volume of the tree by the blower's output in CFM.

Example: 24,500 cubic feet tree

50,000 CFM blower output equals 0.49 (about 1/2 minute)

From the bucket test, you can calculate the amount of spray applied in the 1/2 minute it takes to displace the air from the tree. Six gallons per minute times 1/2 equals 3 gallons per tree.

When spraying large numbers of trees, most contracts specify the amount of chemical per tree. For instance, one pint of methoxychlor per tree is commonly specified for Dutch elm disease control.

Knowing that the above equipment sprays an average tree in about 1/2 minute, and making an assumption that the bucket test shows nozzle output of 6 gallons per minute, or 3 gallons per tree, how much methoxychlor should be mixed in the tank to apply one pint per tree? Obviously, this is one pint per 3 gallons. Or, dividing the capacity of the tank by 3 (gallons per tree) times pints of methoxychlor per tree.

Example: 100 gallon tank

3 gallons equals 33 (trees) times 1 pint per tree

33 pints methoxychlor per tank

The advantage of low-volume sprayers is obvious when comparing the 3 gallons of spray applied per tree with this equipment to the 40 or 50 gallons required to spray the same tree with a hydraulic spray system. The disadvantages include greater drift, a greater chance of inadequate coverage due to the wind, evaporation or careless application.

Once the equipment is set up for the correct nozzle pressures and mixing rates, routine checks are all that are necessary to keep the system calibrated. Equipment dealers can help you set up your system. Be sure to keep a record with each piece of equipment.

Develop a routine for servicing and checking the equipment. Unless properly maintained, even the most carefully calibrated equipment will not perform correctly. The best time for cleaning equipment is at the end of the day. A few minutes spent in maintenance to prevent the plugging of nozzles and screens, or residue from solidifying in the bottom of a tank is time well spent. It is easy to lose your enthusiasm for a day's work if you are confronted with a nasty cleanup job the first thing in the morning. If the equipment is clean and ready to go in the morning, a quick bucket test to make sure everything is in order will get the crew on their way.

Be sure to provide a card or notebook with each piece of equipment so the crew can record performance of each of the required service chores, and by whom. As supervisor, be sure you regularly check these records to make sure they are being filled out. If you don't use them, your crews won't either.

Credit: The Landscape Contractor/February 1984

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