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(Continued from July issue)

VII. Locker Room— $6\frac{1}{2}' \times 15' \times 12'$

Lockers are important for students' storage of coveralls and other work clothes as well as books and the like. The floor should be of concrete or other easily cleaned water-proof material. It would be desirable to provide a shower in one end of this room; however, such an arrangement would demand a larger room than indicated in the plan. When a heating room is not needed, a part of that space may be used for showers. The following is suggested equipment which should be provided in this room. The numbers correspond to those in the floor plan.

1. Lockers—The regulation steel lockers similar to those ordinarily used in schools are recommended.
2. Bench—This bench is 10' long, 12" to 14" wide, and about 16" high.

VIII. Lavatory— $7' \times 11\frac{1}{2}' \times 12'$

This room should have a concrete floor with a floor drain. Sinks and toilet may be arranged as best suits the design. The window should be of frosted glass, glass brick, or other translucent material. Adequate ventilation should be provided.

The following is suggested equipment which should be provided in this room. The numbers correspond to those in the floor plan:

1. Sink—The sink indicated in the plan is about 24" wide, and 6' long. It should be installed 36" from the floor and fitted with at least three sets of mixing faucets for hot and cold water.
2. Toilet—The toilet should be of standard design of the type used in public buildings and separate from the rest of the room by partition as indicated in the plan.

IV. Farm Shop— $40' \times 58' \times 12'$

It will be immediately noted that this room provides only the minimum space needs of a modern farm shop. The floor may be of concrete, a combination of concrete and wood block, or a combination of concrete with maple flooring, with about 20' or 25' of the

floor space in the woodworking area of wood construction. If concrete flooring is used throughout, two floor drains should be provided and the floor sloped enough to permit proper drainage. Windows should be steel framed shop type, or glass brick. Window sills should be at least 36" from the floor. A large weather tight door should be provided at the end of the room opposite the classroom. This door should be 12' wide, by 10' high. The most desirable type is one which opens overhead. As much natural light as possible should be provided, but enough wall space to accommodate wall cabinets for tools must be reserved. The artificial light fixtures in this room should be fluorescent shop type.

The following is suggested equipment which should be provided in this room. The numbers correspond to those in the floor plan:

1. Tool Cabinets—These tool cabinets are 6" deep x 4' high x 8' wide when opened. They should be constructed of $\frac{3}{4}"$ fir plywood. The central sections should be securely fastened to the wall with the bottom of the cabinets at least 36" from the floor. The two outer sections should be securely attached with three broad hinges on either side. The interior of the cabinets are fitted to hold the tools and equipment for which they are designed and supplied with a hasp and padlock. These cabinets are placed around the room at various points for the purpose of storing the tools and equipment near the work stations where they will be used.
2. and 3. Benches—These benches should be of heavy construction securely fastened to the walls. The tops should be 34" from the floor and 24" wide. At the woodworking stations indicated by the figure (2), the benches should be fitted with woodworking vises of heavy duty design. At the metal working stations, the bench tops should be covered with heavy sheet metal and fitted with adjustable machinists vises with 4" to $4\frac{1}{2}"$ jaws. It is generally considered advisable to provide storage space below the benches because such areas become "catch-alls." An advantage of using the space for storage however, is that in most shops, storage space is inadequate. NOT

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4. Hoist—A good farm shop should be equipped with a $1\frac{1}{2}$ ton capacity hoist. This hoist may be permanently installed on a 6 inch "I" beam suspended from the ceiling. In some shops, a similar beam is suspended on tripods on each end so as to make it movable. Another type of hoist is the commercial movable hoist which is mounted on wheels.
5. Welding Area—This area is set aside in the plan for electric-arc and acetylene welding. Some shop instructors prefer a fire-proof canvas curtain which may be drawn on the suspended rod to form a welding booth. Others use a 4' x 8' plywood panel hinged in the center of the longer dimension. Such a panel provides a good portable shield to protect other students from the glare of the arc welding. Provisions should be made near this area for a 220 volt electric lead-in for the arc welder.
6. General Purpose Bench—This bench should be 3' wide x 6' long x 36" high. The bench should be of heavy construction but movable. It will be used chiefly in connection with woodworking construction and repair jobs. One vise should be of the woodworking type and the other an adjustable 4" machinist vise.
7. Soldering Bench—This bench should be 3' wide x $4\frac{1}{2}$ ' long x 36" high. It should be of heavy construction with a metal covered top. The bench should be movable and fitted with two adjustable 4" machinist vises.
8. Metal Working Bench—This bench is 3' wide x $4\frac{1}{2}$ ' long x 36" high of very heavy construction with metal top. It should be securely fastened to the floor and fitted with one $2\frac{1}{2}$ " capacity pipe vise and one $4\frac{1}{2}$ " blacksmith vise.
9. Post Drill—With 3-jaw, key or self tightening chuck, two or more speeds.
10. Forge—30" x 36" x 6"—Hand or electric blower.
11. Anvil—Blacksmith's, with tool steel facing, 150 lbs. or 200 lbs.
12. Chimney.
13. Grinder—Floor, electric, wheel size 10" or 12" with $1\frac{1}{2}$ " or 2" face. A 6" to 8" bench grinder should be mounted on the metal working or soldering bench.
14. Bulletin Board—Similar to the one in the classroom (item 6).
15. Iron Storage Rack—This rack is made of three horizontal rows of metal brackets mounted on the wall at 16" to 18" intervals as shown in the plan.

X. Suggested List of Tools and Equipment for Farm Mechanics Shop

The need for tools and equipment, being determined by what is to be taught in the farm shop, varies considerably between schools. Therefore, only a suggested list can be prepared.

This list is based on one originally prepared in the U. S. Office of Education and is divided into three groups. The number opposite each item indicates a minimum. In some schools an item may be entirely eliminated, in others the number may be increased.

A. General List of Items for the Farm Mechanics Shop

Anvils

Blacksmith's with tool steel facing 150 or 200 lbs.	1
Guard and sickle	1

Bars

Crow and tamping, combination—6 ft., home-made	2
Pinch, 3 ft. and 4 ft. lengths, each	1

Wrecking	2
Battery lifter, strap type	1
Bevel, Sliding T	2
Bits	
Auger $\frac{1}{4}$ " to $1\frac{1}{4}$ " by 16ths, set	2
Countersink	2
Drill, twist $\frac{1}{2}$ "— $\frac{3}{8}$ "— $\frac{3}{4}$ "—1" $\frac{1}{2}$ " shank, each	1
Expansive— $\frac{7}{8}$ " to 3"	1
Screw driver $\frac{1}{4}$ "— $5/16$ "— $\frac{3}{8}$ " each	2
Wood boring, for use in brace $\frac{1}{4}$ " to $\frac{3}{4}$ " by 16ths, set	1
Board, Drawing	2
Brace, ratchet bit, 10" sweep	2
Brake, angle iron, home made	1
Brush	
Wire, wheel	1
Wire, hand	1
Cans	
Gasoline, safety—size optional	1
Oiler, squirt—assorted sizes	3
Storage, for solvent	1

Chisels			
Cabinet, shank running through handle 1/4"—			
1/2"—3/4"—1"—1 1/4" set	1		
Cold, 3/8"—1/2"—3/4"—1" each	2		
Cold, blacksmith's handled width at eye 1 1/2"	1		
Hot, blacksmith's handled width at eye 1 1/2"	1		
Clamp fixtures, for use on 3/4" pipe, set	4		
Clamps			
"C"—4"—6"—8"—pairs each	1		
Splicing, 9"	1		
Clipper, bolt—30" length	1		
Compass, drawing	2		
Coppers, soldering, 1 1/2"—3 lbs. pair each	2		
Cutter			
Glass	1		
Pipe—capacity 1. to 2"	1		
Die stock and dies, pipe threading, ratchet, pipe capacity 1/8" to 3/4"	1		
Die stock and dies, pipe threading, ratchet, adjustable, with receding dies—1" to 2" capacity	1		
Digger, post hole, long handle	2		
Dividers, wing 8" or 10"	2		
Dresser, emery wheel	1		
Drills			
Hand—capacity 1/4"	1		
Electric, heavy duty 1/2" with bench stand	1		
Post, with 3-jaw, key or self-tightening chuck, 2 or more speeds	1		
Drill, star—1/4"—3/8"—1/2"—5/8"—3/4"—1"—set	1		
Drivers			
Screw, offset—6"	1		
Screw, shockproof—4"—6"—8"—12" each	1		
Screw,, short, heavy duty—shockproof	1		
Edger, concrete worker's, square corner and round corner, each	1		
Extractor, screw—"Ezy-out" set	1		
Fire pot, gasoline	1		
Flaring tool, tube	1		
Floater, wood, concrete worker's	1		
Forge, 30" x 36" x 6"	1		
Gauges			
Draw, harness maker's	1		
Vacuum	1		
Generator, acetylene, portable—capacity 20-30 lbs. of carbide—optional	1		
Goggles, grinding—pair	3		
Grinders			
Bench, electric, wheel size 6" to 8"	1		
Floor electric, wheel size 12"—face 1 1/2" to 2"	1		
Sickle, electric	1		
Groover			
Concrete worker's	1		
Hand 1/4"—3/8" sheet metal worker's each	1		
Guns			
Alemite, lever type	1		
Oil and grease	1		
Zerk, lever type	1		
Haft, awl, assorted sizes	6		
Hammers			
Ball peen—1 lb. and 2 lb. each	2		
Claw, curved or straight—16 oz.	12		
Cross peen—2 1/2 lbs.	4		
Sledge, handled—6 to 8 lb.	2		
Hardy, blacksmith's—to fit anvil	2		
Hatchet			
Broad or bench—4 1/2" cutting edge	2		
Shingling	2		
Helmet, arc welders	2		
Hoists			
"Built up," "A" frame—3" pipe or tubing with casters; or "I" beam	1		
Chain, differential—capacity 1/2 to 1 ton	1		
Horse, automotive, wide base—home-made	1		
Indicator, speed	1		
Jacks			
Automotive, hydraulic—capacity 2 to 3 tons	2		
Screw	2		
Knives			
Draw—10"	2		
Putty	2		
Saddler's round	1		
Skiving	2		
Ladle, melting—bowl diameter 2 1/2" 4" each	1		
Lamp, trouble—automotive	2		
Levels			
Builder's, with telescope	1		
Carpenter's	1		
Mallet	2		
Mortar board, 30" x 30" home-made	2		
Mortar box, 3' x 6' home-made	1		
Nippers, end cutting	1		
Oil stone, combination	2		
Oiler, hand	2		
Planes			
Block, adjustable—6"	1		
Jack—14"	4		
Jointer—22"	1		
Plate, screw—NC and NF—1/4" to 3/4" by 16th—set, each	1		
Pliers			
Combination, side cutting—8"	6		
Diagonal cutting—8"	2		
Lineman's—8"	2		
Long nose—6"	1		
Plumb bob	1		
Pullers			
Gear, heavy duty	1		
Gear, small—0" to 3"	1		
Punches			
Aligning—points 3/16"—1/4"—3/8" each	1		
Belt, revolving head—4 tube or 6 tube	1		
Blacksmith's round, handled—1/4" and 3/8"—1/2" each	1		
Center, machinist's—diameter at top of tapered point 1/8" and 7/32" each	1		
Leather, hollow, used with hammer—assorted sizes, sets	2		
Pin, machinist's 3/32"—1/8"—5/32"—3/16" 7/32"—9/32"	1		
Sheet metal, with punches 3/32" to 1/4" by 32ds	1		
Starter	1		
Rack, harness—home-made	1		
Reamers			
Burring, spiral pipe end 1/4" to 2"	1		
Expansion blade—19/32" to 1-11/32" set	1		
Rivet Buster	2		
Rules			
Non-folding—2 ft., brass bound	6		
Steel tape—6 ft.	2		
Zig-zag—6 ft.	4		
Saws			
Compass—12"	1		
Crosscut 8 or 10 point—26"	4		
Hack, adjustable frame	2		

Keyhole, hack—10"	1	B. Tractor and Truck Maintenance Equipment	
Rip—5 or 6 point—26"	2	(This list supplements list "A" when instruction	
Tilting arbor or radial—12" complete with		is to be given in this field)	
motor optional	1	Battery hydrometer	1
Scales, architect's	2	Bearing scraper, curved—set	2
Scraper, carbon, wire	2	Bleeder, hydraulic brake	1
Screen, gravel—assorted size mesh, home-made,		Connecting rod aligner	1
each	1	Cotter pin puller or extractor, plier type	2
Seamer, "handy"	1	Creeper, automobile	2
Sets		Cylinder sleeve remover	1
Nail, assorted sizes	4	Compressors	
Rivet, 3 sizes each	1	Air, single stage, automatic, horizontal type	1
Saw, pistol grip	1	Piston ring	2
Shield, welder's arc	3	Valve spring, universal with extra parts	1
Shovels		Gauges	
Round point, long handle	1	Cylinder	1
Round point, short handle	1	Depth, 6"	1
Square point, long handle	2	Thickness	4
Snips		Grinder, valve, engine, hand	2
Tinner's combination pattern—12" length	2	Growler, armature testing	1
Tinner's regular pattern	2	Micrometer calipers, with clamp ring, 2" to 6"	
Spoke shave	2	by thousandths—with ratchet stop and set of	
Squares		standards	1
Combination—12"	1	Piston pin hone	1
Carpenter's steel—16 x 24.—1/16" markings	4	Piston ring groove cleaner	3
Carpenter's steel—8" x 12"	2	Piston ring remover	1
"T"	2	Pliers, water pump, auto	2
Straight edge, wood, home-made	1	Puller, wheel and gear	1
Tank, parts washing 25 gallon, home-made	1	Reamer, ridge, engine cylinder	1
Tape, steel—50 ft. or 100 ft.	1	Spark plug cleaner and tester	1
Tongs		Storage battery cell tester	1
Bolt, blacksmith's—3/8"—1/2"—3/4" by 20" to		Timing light, Neon	1
24" each	2	Valve lifter, heavy duty, automotive	1
Ploughshare, home-made 24"	2	Valve lifter, "C" type, automotive	1
Straight-lipped—20" to 24"	4	Valve or clutch spring tester	1
Torch		Valve refacer, electric	1
Blow, gasoline—capacity one quart	1	Valve seat grinding set, 12,000 r.p.m.	1
Welding, oxy-acetylene, with cutting attach-		Wrenches	
ment	1	Socket, 3/4" square "lock-on" drive, 1 1/8" to	
Trammels, beam, adjustable—pair	1	2 1/4" by 32ds—set	1
Triangles, 30°—60°—45°—each	2	Open end, alloy, 1/4"—3/4"—set	1
Trowel		Spark plug, long, thin, and deep—12pt., 1/2"	
Masons	1	to 1 1/8" by 16ths—set	1
Plasterers	1	Stud setter or extractor	1
Vise		Tension	1
Drill press—6" opening	1	C. Electrical Equipment	
Machinist's, 4" jaw	5	(This list is supplementary to the "A" list for	
Machinist's, 4 1/2" jaw, heavy duty	1	electrical work)	
Pipe—1 1/8" to 3 1/2"	1	Ammeter, AC Portable, " scale	1
Saw—9 1/2" jaw	1	Belt, Lineman's	2
Solid box, blacksmith's—59 lb. to 100 lb.	1	Bit, electrician's—1/2"—3/8"—3/4"—7/8"—1" each	1
Woodworking, rapid acting, 7" jaw	6	Braces, corner	2
Welder, arc—150-200 amp. AC or DC	1	Clamp, lineman's splicing	6
Wire stretcher	1	Climbers, lineman's pair	2
Wrenches		Grip, come-along, wire	1
Adjustable, open end—8"	4	Hickey, conduit bending—1/2"—3/4"—1" each	1
Adjustable, open end—10"—12"—18" each	2	Screw driver, electrician's, insulated—length of	
Box type—5/16" to 1" by 16ths—set	1	blade 3"—4"—6"—8" each	2
Box type—combination box and open end 1/4"		Shovel, telegraph spoon, 8 ft. handle	2
to 3/4" by 16ths—set	2	Soldering irons, electric-tip dia. 9/16"—1 1/8"	
Flex set—3/8"—1/2"—5/8"—3/4"	1	each	1
Ignition, set	1	Tape, tempered steel fish, electrical	1
Monkey, 18" and 21"—each	1	Torches	
Pipe—14"—18"—24"—each	1	Alcohol	3
Socket master, 1/2" square drive, 3/8" to 1 1/8"		Prest-o-lite, lineman's outfit	1
by 32ds—12 point—set	1	Voltmeter, AC, portable, 5" scale	1
Special mechanics set—7/16" to 1" by 16ths		Wattmeter, AC, portable, 5" scale	1
with ratchet handle—12 points—set	1		
Tappet and check nut—set	1		