[7] See Beverly L. Johnson and Elizabeth Waldman, "Most women who head families receive poor job market returns," *Monthly Labor Review*, December 1983, pp. 30–34.

[8] See Gloria Peterson Green and others, "Revisions in the Current Population Survey Beginning in January 1983," *Employment and Earnings*, February 1983, pp. 7–15; and John E. Bregger, "Labor Force Data from CPS to Undergo Revision in January 1983," *Monthly Labor Review*, November 1982, pp. 3–6.

[9] See George T. Silvestri, John M. Lukasiewicz, and Marcus E. Einstein, "Occupational employment projections through 1995," *Monthly Labor Review*, November 1983, pp. 37–49.

[10] See *Occupational Projections and Training Data*, Bulletin 2202 (Bureau of Labor Statistics, 1982), pp. 10 and 11.

Pay in Mountain region coal mines outstrips national average

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Coal miners in the Mountain States[1] averaged $13.28 an hour in July 1982, according to an occupational wage survey by the Bureau of Labor Statistics. (See table 1.) This was 12 percent above the national average for bituminous coal mining and translated into a regional pay advantage of 2 percent in underground mines and 24 percent in surface mines.

At the time of the survey, mining in the Mountain States employed some 15,000 production workers, double the number recorded in an earlier survey conducted in January 1976. A preponderance of these workers were in mines with at least 250 employees, and most were unionized. The region's nonunion workers, however, averaged as much or more than their unionized counterparts, particularly among the 7,725 workers employed in underground mines.

Historically, six States—Illinois, Kentucky, Ohio, Pennsylvania, Virginia, and West Virginia—have accounted for the bulk of the work force in bituminous coal mining. Despite rapid growth in the Mountain States in recent years, these six States still accounted for nearly 80 percent of the Nation's soft coal employment in July 1982; in the 1976 survey, the proportion was 85 percent.

National pay levels. Nationwide, straight-time earnings of bituminous coal miners averaged $11.83 an hour in July 1982, up from $6.94 in January 1976. This represented a 70-percent increase over the 6½ years since the previous survey[2], or an average annual rise of 8.5 percent. By comparison, the Bureau's Employment Cost Index for all private nonagricultural workers rose 61 percent, or approximately 7.7 percent a year, between the first quarter of 1976 and the second quarter of 1982.

Workers in underground mines, nearly seven-tenths of the 158,803 workers covered by the 1982 survey, averaged $11.92 an hour—2 percent more than the $11.65 recorded in surface mines. (See table 1.) This pay relationship, however, was mixed among sections of the country. For example, average earnings of underground-mine workers in Pennsylvania and Kentucky exceeded those of surface-mine workers by 20 percent and 11 percent, respectively. But surface miners held a pay advantage averaging 19 percent in the Mountain States and 4 percent in Illinois.

Earnings distributions narrow. Earnings of individual workers in bituminous coal mines continued to be concentrated within relatively narrow ranges. The middle 50 percent of the production work force earned between $11.36 and $12.43 an hour in underground mines, and between $10.37 and $13.15 an hour in surface mines. The industry's pay systems contribute to this heavy concentration of earnings, as virtually all workers are under formal plans providing single rates for specific groups of occupations. Moreover, the custom of granting wage changes on a uniform cents-per-hour basis has shrunk the industry's wage structure in relative terms.

Pay schedules from the pattern-setting contract between the United Mine Workers of America (UMWA) and the Bituminous Coal Operators' Association (BCOA) illustrate the single-rate arrangements for job groups as well as the effect of uniform cents-per-hour increases (table 2). As of June 7, 1982, mining jobs in both branches of the industry were grouped into five pay grades, with rates ranging from $11.348 to $12.415 in underground mines, and from $11.796 to $13.178 in surface mines.

A comparison of the June 7, 1982, rates with those in effect June 12, 1976, illustrates the pay compression effects of uniform cents-per-hour increases. Pay differences between grades 1 and 5 over this period declined from 15.7 percent to 9.4 percent in underground mines and from 19.0 percent to 11.7 percent in surface mines, while dollar differences among grades remained unchanged. A look at the wage terms of the two most recent UMWA-BCOA agreements shows why this is so.

The March 1978 agreement provided for an immediate $1-an-hour general wage increase and a 28-cents-per-hour cost-of-living adjustment, plus increases of 70 cents each in March 1979 and March 1980. The 3-year agreement negotiated in 1981 provided for general wage increases of $1.20 an hour in June 1981, 50 cents in June 1982, and 40 cents in June 1983, plus nine quarterly increases consisting of 15 cents in June 1982 and each quarter thereafter to March 1984, plus a final 30 cents in June 1984.

Union-nonunion pay. Union members accounted for nearly four-fifths of the industry's production work force. They

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averaged 5 percent more than nonunion workers in underground mines ($11.96 versus $11.58 an hour) and 26 percent more in surface mines ($12.78 versus $10.16). A notable exception to this pattern were the underground mines of the Mountain States, where UMWA contracts covered seven-tenths of the production workers[3]. In these mines, nonunion workers averaged 7 percent more than the union average of $11.91 an hour.

The UMWA represented more than 90 percent of the union workers in the industry, or seven-tenths of the production work force. The Operating Engineers and the Progressive Mine Workers Union together accounted for most of the other union workers. According to the survey, contracts with these unions are limited to surface mines, principally in the Mountain States.

Occupational pay in 1982. A wide variety of jobs characterizes underground mining, which involves a series of coordinated steps from extracting the coal to moving it above ground to haulage points. Thirty-nine occupations, accounting for two-thirds of the work force, were studied separately to represent these activities and the wage structure in un-

Table 1. Number of workers and average straight-time hourly earnings[1] in bituminous coal mining by selected characteristics, United States and selected coal centers, July 1982

Characteristics	United States[2]		Alabama		Illinois		Kentucky[3]		East Kentucky		West Kentucky	
	Workers	Earnings	Workers	Earnings	Workers	Earnings	Workers	Earnings	Workers	Earnings	Workers	Earnings
Total	158,803	$11.83	8,749	$11.83	13,291	$12.04	25,627	$11.58	18,419	$11.49	—	—
Underground mines												
All workers	110,080	11.92	5,881	11.81	9,396	11.89	17,786	11.94	13,245	11.95	—	—
Size of mine:												
Fewer than 250 workers	37,849	11.89	—	—	—	—	10,010	11.92	9,414	11.92	—	—
250–499 workers	36,766	11.95	—	—	3,963	11.87	4,529	12.01	3,035	12.07	—	—
500 workers or more	35,465	11.91	—	—	4,684	11.91	—	—	—	—	—	—
Labor-management contracts:												
Establishments with—												
Majority of workers covered	98,000	11.96	5,881	11.81	9,396	11.89	13,232	12.15	9,154	12.27	—	—
None or minority of workers covered	12,080	11.58	—	—	—	—	4,554	11.32	4,091	11.25	—	—
Surface mines												
All workers	48,723	11.65	2,868	11.88	3,895	12.41	7,841	10.75	5,174	10.30	2,667	11.63
Size of mine:												
Fewer than 100 workers	20,757	10.12	1,454	11.31	148	12.22	3,724	9.63	2,845	9.50	879	10.03
100–249 workers	10,012	12.68	—	—	1,127	12.37	1,764	11.81	681	10.82	1,083	12.44
250 workers or more	17,954	12.85	—	—	2,620	12.44	2,353	11.73	1,648	11.45	—	—
Labor-management contracts:												
Establishments with—												
Majority of workers covered	27,672	12.78	1,953	12.49	3,873	12.43	3,164	12.21	1,172	11.84	1,992	12.42
None or minority of workers covered	21,051	10.16	915	10.58	—	—	4,677	9.77	4,002	9.85	675	9.30

Characteristics	Ohio		Pennsylvania		Virginia		West Virginia		Mountain States[4]	
	Workers	Earnings	Workers	Earnings	Workers	Earnings	Workers	Earnings	Workers	Earnings
Total	17,084	$11.63	21,131	$11.39	8,646	$11.18	38,217	$12.05	15,302	$13.28
Underground mines										
All workers	—	—	14,792	11.99	7,589	11.59	32,955	12.01	7,725	12.15
Size of mine:										
Fewer than 250 workers	—	—	3,444	11.93	4,727	11.42	14,738	12.08	2,838	12.31
250–499 workers	—	—	6,069	11.94	2,428	11.86	10,755	12.03	4,285	12.09
500 workers or more	—	—	5,279	12.07	—	—	7,462	11.85	—	—
Labor-management contracts:										
Establishments with—										
Majority of workers covered	—	—	14,484	12.00	6,054	11.88	30,201	11.99	5,596	11.91
None or minority of workers covered	—	—	—	—	1,535	10.43	—	—	2,129	12.77
Surface mines										
All workers	4,130	10.97	6,339	10.01	—	—	5,262	12.28	7,577	14.44
Size of mine:										
Fewer than 100 workers	2,212	9.93	3,840	9.18	—	—	3,499	12.16	782	13.54
100–249 workers	1,214	12.06	1,392	10.93	—	—	1,488	12.52	2,156	14.51
250 workers or more	—	—	1,107	11.71	—	—	—	—	4,639	14.55
Labor-management contracts:										
Establishments with—										
Majority of workers covered	2,395	12.14	990	11.71	—	—	4,529	12.49	4,649	14.36
None or minority of workers covered	1,735	9.35	5,349	9.69	—	—	733	10.96	2,928	14.56

[1]Earnings exclude premium pay for overtime and for work on weekends, holidays, and late shifts. Workers refer to production and related employees.

[2]Includes data for coal centers in addition to those shown separately.

[3]Includes data for both East and West Kentucky.

[4]Mountain States include Arizona, Colorado, Idaho, Montana, New Mexico, Utah, and Wyoming.

NOTE: Dashes indicate that no data were reported or that data did not meet publication criteria.

Table 2. Wage rates[1] established under contract between Bituminous Coal Mine Operators and United Mine Workers of America, selected years

Labor grade	Effective date		
	June 12, 1976	March 27, 1979	June 7, 1982
	Underground workers in deep mines		
Labor grade:			
1	$6.817	$ 8.798	$11.348
2	6.890	8.870	11.420
3	7.112	9.093	11.643
4	7.480	9.460	12.010
5	7.885	9.865	12.415
High/low difference:			
Dollars	1.068	1.067	1.067
Percent	15.7	12.1	9.4
	Surface workers in strip and auger mines		
Labor grade:			
1	$7.265	$ 9.245	$11.796
2	7.346	9.326	11.877
3	7.632	9.612	12.163
4	7.996	9.976	12.527
5	8.647	10.627	13.178
High/low difference:			
Dollars	1.382	1.382	1.382
Percent	19.0	14.9	11.7
	Workers at surface facilities for deep or surface mines		
Labor grade:			
1	$7.226	$ 9.206	$11.757
2	7.306	9.286	11.837
3	7.589	9.569	12.120
4	7.833	9.813	12.364
High/low difference:			
Dollars	.607	.607	.607
Percent	8.4	6.6	5.2

[1]Rates refer to base pay, including any cost-of-living adjustments and general wage increases granted up through the effective date indicated.

SOURCE: BLS *Wage Chronology: Bituminous Coal Mine Operators and United Mine Workers, 1933–81*, Bulletin 2062 (Bureau of Labor Statistics, 1980), pp. 25–26.

derground mining. Average hourly earnings among these jobs ranged from $12.48 for continuous mining machine operators and longwall operators to $11.31 for boom conveyor operators. Roof bolters, the most populous group, averaged $12.41. In addition to continuous mining machine operator, occupational categories with at least 4,000 workers included underground maintenance mechanic ($12.47), underground maintenance electrician ($12.46), shuttle car operator ($11.72), and conveyor belt cleaner ($11.39).

The majority of workers in surface mines are operators of heavy earth-moving equipment—bulldozers and power shovels—and maintenance mechanics. Wage data were collected for 16 jobs which accounted for three-fourths of the work force. Earnings averaged from $13.73 an hour for maintenance electricians to $6.95 for slate pickers (found at smaller sites). Bulldozer operators and truckdrivers, the two most populous groups in surface mines, averaged $11.60 and $11.32 per hour. Other numerically important occupations (with at least 1,000 workers) included electrician ($13.73), maintenance welder ($12.82), maintenance mechanic ($12.50), power shovel operator ($11.95), shot firer ($11.88), oiler and greaser ($11.42), and machine driller ($11.29).

Employee benefits in 1982. Nearly all workers in underground mining received paid holidays, usually 11 days annually—the number provided under the UMWA-BCOA national wage agreement of June 1981. Paid holiday provisions applied to more than nine-tenths of the surface-mine workers, with just over one-half receiving 11 days. Less liberal holiday provisions typically applied to workers in both branches of bituminous coal mining in East Kentucky and to surface-mine workers in Pennsylvania. The Mountain States had the largest proportions of workers in establishments providing 12 holidays per year—at least one-fourth in each branch.

Virtually all production and related workers in both segments of the bituminous coal mining industry were in establishments providing paid vacations after qualifying periods of service. Under the UMWA-BCOA agreement, workers with at least 1 year of service receive an annual vacation package consisting of 14 consecutive days off with 12 days' pay, 4 floating vacation days, and 5 personal leave days. Workers also are eligible for graduated (additional) vacation days ranging from 1 day after 6 years of service to 13 days after 18 years. Under the agreement, workers with less than 1 year of service receive a total of 6 days of paid vacation annually.

For surveyed workers who were not covered by UMWA provisions, vacation provisions were typically 1 or 2 weeks of vacation pay after 1 year of service, and at least 3 weeks after 10 years of service.

Almost all workers in underground and surface mines were in establishments providing hospitalization, surgical, basic medical, and major medical insurance. At least four-fifths of the workers were in surface mines providing life, accidental death and dismemberment, and dental insurance; these three benefits, however, were more prevalent among workers in underground mines.

In underground mines, employer-financed pension plans were maintained for 95 percent of the workers. In surface mining operations, pension plans covered approximately four-fifths of the workers, but not all plans were fully funded by the employer.

Pensions are provided for UMWA miners who retired before December 1974 under a 1950 Pension Plan and Trust; for those who retired or who will retire after December 1974, pensions are administered under the 1974 Pension Plan and Trust. Both plans are funded by mine operators in accordance with provisions set forth in the collective bargaining agreement.

A COMPREHENSIVE REPORT on the 1982 survey, *Industry Wage Survey: Bituminous Coal, July 1982*, Bulletin 2185 (Bureau of Labor Statistics, 1983) is for sale by the Superintendent of Documents, Government Printing Office Washington, D.C. 20402. The report provides additional information on occupational earnings and employee benefits. Price, $2.50. □

FOOTNOTES

[1] The Mountain States include Arizona, Colorado, Idaho, Montana, New Mexico, Utah, and Wyoming.

[2] For details of both studies, see *Industry Wage Survey: Bituminous Coal, July 1982*, Bulletin 2185, and *Industry Wage Survey: Bituminous Coal, January 1976—March 1981*, Bulletin 1999 (Bureau of Labor Statistics). Each survey covered establishments employing 10 workers or more which were classified in Industry Group 1211, as defined in the 1972 edition of the *Standard Industrial Classification Manual* prepared by the U.S. Office of Management and Budget. Included were underground, strip, and auger mines, and coal cleaning, crushing, screening, and sizing plants operated in conjunction with the mine served. Separate auxiliary units such as central offices were excluded, as were establishments limited to coal cleaning and/or preparation.

Wage data reported in this article exclude premium pay for overtime and for work on weekends, holidays, and late shifts. The coal centers studied separately were Alabama, Illinois, Kentucky, East Kentucky, West Kentucky, Ohio, Pennsylvania, Virginia, West Virginia, and the Mountain States.

[3] For reports on union activity in the soft coal industry in Western States, see Everett M. Kassalow, "Labor-Management Relations and the Coal Industry," *Monthly Labor Review*, May 1979, pp. 23–27; William H. Miernyk, "Coal," in Gerald G. Somers, ed., *Collective Bargaining: Contemporary American Experience* (Madison, Wis., Industrial Relations Research Association, 1980), pp. 1–48; and Susan Carey, "UMW Organizing Bids Are Blunted by Aggressive Nonunion Operators," *Wall Street Journal*, Aug. 3, 1983, section 2, p. 21.

Wages in the paper industries among highest in manufacturing

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Average hourly earnings of production workers in pulp, paper, and paperboard mills are among the highest found in manufacturing industries covered by the Bureau's industry wage survey program.[1] Straight-time earnings of the 134,113 production workers in the three industries averaged $10.22 an hour in July 1982.[2] Among the individual industries, average pay levels were $11.59 an hour in separate pulp mills, $10.30 in paperboard mills, and $10.10 in paper mills. Contributing to the relatively high wages paid in these industries are the many skilled workers in both production and maintenance occupations. Also, nearly all production workers (96 percent) were employed in mills operating under labor-management agreements. Agreements with the United Paperworkers International Union (AFL–CIO) were predominant, with the exception of mills in the Pacific States. There, employees were represented by the independent Western Pulp and Paper Workers Union.

Average hourly earnings in July 1982 were 56 percent above the $6.54 level recorded in a similar survey conducted in the summer of 1977—a 9.3-percent annual rate of increase.[3] By comparison, the wage and salary component of the Bureau's Employment Cost Index for nondurable goods manufacturing rose 46 percent (7.9 percent a year) from the second quarter of 1977 to the second quarter of 1982.

For the six regions studied separately, average hourly earnings in July 1982 ranged from $12.43 in the Pacific States to $8.92 in the Middle Atlantic region. Pay in the Southeast, where three-tenths of the production workers were employed, averaged $10.53. Production worker employment in the Great Lakes area accounted for about one-fourth of the total while one-tenth each were found in New England, the Middle Atlantic States, the Southwest, and the Pacific States.

About three-eighths of the workers were located in metropolitan areas[4] in July 1982. On a regional basis, the proportion ranged from 85 percent in the Middle Atlantic States to 26 percent in New England. Nearly nine-tenths of the workers were employed in mills with 250 employees or more, and nearly one-half were in establishments with 1,000 workers or more.

Forty-nine occupations containing approximately one-half of the production work force, were selected as representative of the industries' wage structures and manufacturing activities. Average hourly earnings in these jobs ranged from $13.14 for general maintenance mechanics to $8.45 for janitors. (See table 1 for information on 23 of the 49 survey occupations.) Pulp and paper millwrights, numerically the largest survey occupation with 6,015 employees, averaged $11.82. Averages of $11.74 or more were also attained by other skilled maintenance workers including machinists, electricians, and pipefitters.

With relatively few exceptions, production workers were paid time rates, under formal plans providing single rates for individual occupations. As a result, hourly earnings for specific categories usually clustered within relatively narrow ranges. Also contributing to the high degree of wage concentration was the predominance of labor-management agreements.

Wage rates within overall job categories varied by processes used in pulp making, grade of paper, or paperboard produced, and size and speed of the machine used in making the product. For example, workers using the *sulphite* process to make pulp generally had earnings higher than those working with the *sulphate* process. Many of the machine room pay levels were higher as the machine wire width increased from 100 inches to 301 inches or more.

In July 1982, the most common form of work schedule was rotating shifts, affecting seven-tenths of the production workers. Workers typically alternated among day, evening, and night shifts, changing shifts every 7 days. Workers on evening and night shifts almost always received cents-per-hour differentials over day-shift work, typically between 10 and 20 cents on evening shifts and between 20 and 30 cents on night shifts. Day-shift work schedules of 42 hours per week were found in mills employing slightly less than one-half of the production workers. Schedules of 40 hours applied in mills with just over one-third of the workers, while

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