

COMPANY INFORMATION ON TOP 500 FIRMS IN R&D

This volume of U.S. Corporate R&D, prepared by the National Science Foundation, details the research and development (R&D) expenditures and other financial characteristics of each of the top 500 firms in R&D in 1996 and 1997. This information is available because the Securities and Exchange Commission (SEC) requires public corporations to provide such information in detailed financial reports. The preceding volume of this report (Volume 1: Top 500 Firms in R&D by Industry Category) details aggregate data of the U.S. Corporate R&D data series for 1996 and 1997, discusses the nature of the data series, and compares it to the long-established SRS data series on U.S. industry R&D.

TOP 20 R&D SPENDING COMPANIES

As table 1 indicates, the top 20 R&D spending firms of 1997 are generally the same as those that topped the list in 1996, albeit with most rankings changed. The 1997 R&D increases for Lucent Technologies (discussed previously) and the Boeing Company are largely due to reasons other than ordinary growth. If the McDonnell-Douglas Corporation's \$355 million in 1996 R&D spending is added to Boeing's 1996 spending, the actual increase for this combined company is 23.7 percent.

DATA TABLES

Tables 2, 3, and 4 present data on each of the top 1997 500 R&D-spending corporations. Table 2 lists each firm by alphabetical order, indicates its rank within the 500, and provides information on its major and detailed industry status. Table 3 categorizes the 1997 top corporations by major and detailed industrial sectors with aggregate 1996 and 1997 totals for R&D spending and employees. Tables 4 and 5 also categorize the corporations by sector, and provide aggregate R&D, sales, employee, and capital expenditure data derived from both the top 1997 and top 1996's 500 R&D-spending corporations.

It is important to note that the 1996 aggregations in appendix table 2 are not the same as those of tables 4 and 5. Whereas the 1996 aggregates of table 3 reflect the

activity of the top 1997 corporations in 1996, 1996 aggregates in tables 4 and 5 represent the activity of the top 1996 corporations. All 1996 aggregates used in this report are the same as those in tables 4 and 5 and, accordingly, reflect the activity of top 500 1996 R&D spenders of that year. While approximately 90 percent of the top 1996 and 1997 corporations are the same, 51 firms from 1996 did not continue on into the 1997 ranking for a variety of reasons including inadequate R&D spending or because they were acquired or merged with another firm. For example, in 1997 the Boeing Company bought out the McDonnell-Douglas Corporation, which was included in the top 500 corporations of 1996, and had been the fourth highest R&D spender in the aircraft, guided missiles, and space vehicles sector.

In order to derive the most meaningful multi-year aggregate data from *Compustat*, it is necessary to count the prior year activity of firms that may no longer exist. This is because *Compustat* data offer a snapshot of any given year. *Compustat* does not alter the data of individual companies from earlier years to reflect mergers, spin-offs, and other changes that affect the company in later years. For example, if only data from the top 1997 R&D spending firms are used to reflect aggregate R&D spending for the aircraft, guided missiles, and space vehicles sector in both 1996 and 1997, there would seem to be a very large jump in R&D spending from \$3.8 to \$4.7 billion. However, if top 1996 R&D spending firm data are used instead to generate a 1996 R&D aggregate, which includes McDonnell-Douglas R&D, the sector's spending rises somewhat more moderately from a 1996 total of \$4.2 billion.

This rather technical consideration underscores the important issue that technology corporations are experiencing not only rapid growth in technology spending, but operate in a climate of intensifying competitive pressure and structural change. Mergers, acquisitions, and various forms of corporate alliances are occurring more often not only within sectors, but between firms in different sectors as the scope and character of technology markets change ever more rapidly.

Table 1. Top 20 1997 R&D spending corporations

1997 R&D rank	1996 R&D rank	Corporation	1996 R&D	1997 R&D	Percent change	Major sector	Detailed sector
			[Billions of dollars]				
1	1	GENERAL MOTORS CORP.....	8.900	8.200	-7.9	Motor vehicles & surface transportation	Motor vehicles & motor vehicle equipment
2	2	FORD MOTOR CO.....	6.821	6.327	-7.2	Motor vehicles & surface transportation	Motor vehicles & motor vehicle equipment
3	3	INTL BUSINESS MACHINES CORP....	3.934	4.307	9.5	Information & electronics	Electronic computers and computer terminals
4	7	LUCENT TECHNOLOGIES INC.....	1.838	3.100	68.7	Information & electronics	Modems & other wired telephone equip.
5	4	HEWLETT-PACKARD CO.....	2.718	3.078	13.2	Information & electronics	Electronic computers and computer terminals
6	5	MOTOROLA INC.....	2.394	2.748	14.8	Information & electronics	Radio, TV, cell phone, and satellite comm. equip.
7	8	INTEL CORP.....	1.808	2.347	29.8	Information & electronics	Electronic components (semiconductors, coils, etc.)
8	6	JOHNSON & JOHNSON.....	1.905	2.140	12.3	Medical substances & devices	Drugs: pharmaceutical preparations
9	9	PFIZER INC.....	1.684	1.928	14.5	Medical substances & devices	Drugs: pharmaceutical preparations
10	12	MICROSOFT CORP.....	1.432	1.925	34.4	Information & electronics	Prepackaged software
11	19	BOEING CO.....	1.200	1.924	60.3	Aircraft, guided missiles & space vehicles	Aircraft, guided missiles & space vehicles
12	10	CHRYSLER CORP.....	1.600	1.700	6.3	Aircraft, guided missiles & space vehicles	Motor vehicles & motor vehicle equipment
13	11	MERCK & CO.....	1.487	1.684	13.2	Medical substances & devices	Drugs: pharmaceutical preparations
14	13	AMERICAN HOME PRODUCTS CORP.....	1.429	1.558	9.0	Medical substances & devices	Drugs: pharmaceutical preparations
15	14	GENERAL ELECTRIC CO.....	1.421	1.480	4.2	Machinery & electrical equipment	Electrical equipment (industrial & household)
16	15	BRISTOL MYERS SQUIBB.....	1.276	1.385	8.5	Medical substances & devices	Drugs: pharmaceutical preparations
17	20	LILLY (ELI) & CO.....	1.189	1.382	16.2	Medical substances & devices	Drugs: pharmaceutical preparations
18	18	ABBOTT LABORATORIES.....	1.205	1.302	8.1	Medical substances & devices	Drugs: pharmaceutical preparations
19	17	PROCTER & GAMBLE CO.....	1.221	1.282	5.0	Chemicals	Other chem. (soaps, ink, paints, fertiliz. explos, etc.)
20	16	PHARMACIA & UPJOHN INC.....	1.266	1.217	-3.9	Medical substances & devices	Drugs: pharmaceutical preparations

SOURCE: Standard & Poor's Compustat, Englewood, CO

Table 2. Alphabetical list of top 500 corporations in R&D spending: 1997

Corporation (alphabetical order)	Rank among top 500 in R&D	R&D [In thousands of dollars]	Status in major sector				Status in detailed sector					
			Major sector	Rank among top 500 firms in the same major sector	Number of top 500 firms in the same major sector	Percent of R&D among top 500 in the same major sector	Major sector R&D total [In thousands of dollars]	Detailed sector	Rank among top 500 firms in the same detailed sector	Number of top 500 firms in the same detailed sector	Percent of R&D among top 500 in the same detailed sector	Detailed sector R&D total [In thousands of dollars]
3COM CORP.....	41	581,613	Information & electronics	16	217	1.27	45,823,950	Computer networking communications equip.	2	15	4.98	2,620,503
ABBOTT LABORATORIES.....	18	1,302,403	Medical substances & devices	7	83	6.56	19,849,094	Drugs: pharmaceutical preparations	7	38	8.28	15,733,395
ACCLAIM ENMNT INC.....	384	30,824	Information & electronics	163	217	0.07	45,823,950	Prepackaged software	39	58	0.47	6,619,062
ACTEL CORP.....	442	26,465	Information & electronics	189	217	0.06	45,823,950	Electronic components (semiconductors, coils, etc.)	31	35	0.40	6,648,235
ACTIVISION INC.....	417	28,393	Information & electronics	180	217	0.06	45,823,950	Prepackaged software	47	58	0.43	6,619,062
ACUSON CORP.....	241	57,286	Medical substances & devices	34	83	0.29	19,849,094	Medical instruments	11	20	2.84	2,018,146
ADAPTEC INC.....	109	172,522	Information & electronics	49	217	0.38	45,823,950	Computer networking communications equip.	6	15	8.46	2,620,503
ADC TELECOMMUNICATIONS INC.....	139	122,638	Information & electronics	67	217	0.27	45,823,950	Modems & other wired telephone equipment	4	14	3.06	4,010,990
ADOBE SYSTEMS INC.....	105	176,831	Information & electronics	46	217	0.39	45,823,950	Prepackaged software	5	58	2.67	6,619,062
ADTRAN INC.....	392	30,055	Information & electronics	166	217	0.07	45,823,950	Modems & other wired telephone equipment	11	14	0.75	4,010,990
ADVANCED FIBRE COMM INC.....	450	25,726	Information & electronics	197	217	0.06	45,823,950	Modems & other wired telephone equipment	13	14	0.64	4,010,990
ADVANCED MICRO DEVICES.....	51	467,877	Information & electronics	20	217	1.02	45,823,950	Electronic components (semiconductors, coils, etc.)	4	35	7.04	6,648,235
AEROQUIP-VICKERS INC.....	202	72,161	Basic industries & materials	29	66	0.86	8,355,329	Fabricated metal products, except machinery & transp. eq.	2	6	14.20	508,038
AFFYMETRIX INC.....	419	28,168	Medical substances & devices	65	83	0.14	19,849,094	Medical instruments	16	20	1.40	2,018,146
AGCO CORP.....	254	54,100	Machinery & electrical equipment	22	51	0.77	7,038,500	Machinery (indus., farm, services, mining & construction)	16	40	1.36	3,967,844
AGOURON PHARMACEUTICALS INC.....	156	108,137	Medical substances & devices	22	83	0.54	19,849,094	Drugs: pharmaceutical preparations	13	38	0.69	15,733,395
AIR PRODUCTS & CHEMICALS INC.....	150	113,700	Chemicals	11	43	1.67	6,821,613	Industrial chem., plastic & other	7	22	2.65	4,295,342
ALBANY INTL CORP.-CL A.....	500	23,070	Basic industries & materials	66	66	0.28	8,355,329	Textile & apparel products	2	2	29.93	77,091

See SOURCE at end of table

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ALBEMARLE CORP.....	379	31,446	Chemicals	32	43	0.46	6,821,613	Industrial chem., plastic & other synthetic materials	17	22	0.73	4,295,342
ALLEGHENY TELEDYNE INC.....	229	60,300	Basic industries & materials	37	66	0.72	8,355,329	Ferrous metal products	1	1	100.00	60,300
ALLEN TELECOM INC.....	447	26,137	Information & electronics	194	217	0.06	45,823,950	Radio, TV, cell phone, & satellite communication eq.	8	10	0.72	3,625,457
ALLERGAN INC.....	132	131,200	Medical substances & devices	20	83	0.66	19,849,094	Drugs: pharmaceutical preparations	12	38	0.83	15,733,395
ALLIANCE PHARMACEUTICAL CP.....	311	43,278	Medical substances & devices	48	83	0.22	19,849,094	Drugs: in vitro, in vivo diagnostic substances	5	6	7.30	592,959
ALLIEDSIGNAL INC.....	62	349,000	Aircraft, guided missiles & space vehicles	4	8	7.47	4,672,800	Aircraft, guided missiles & space vehicles	4	8	7.47	4,672,800
ALPHA BETA TECHNOLOGY INC.....	433	27,392	Medical substances & devices	68	83	0.14	19,849,094	Drugs: pharmaceutical preparations	31	38	0.17	15,733,395
ALPHARMA INC -CL A.....	373	32,068	Medical substances & devices	56	83	0.16	19,849,094	Drugs: pharmaceutical preparations	26	38	0.20	15,733,395
ALTEON INC.....	497	23,264	Medical substances & devices	83	83	0.12	19,849,094	Drugs: pharmaceutical preparations	38	38	0.15	15,733,395
ALTERA CORP.....	252	54,417	Information & electronics	113	217	0.12	45,823,950	Electronic components (semiconductors, coils, etc.)	16	35	0.82	6,648,235
ALUMINUM CO OF AMERICA.....	128	143,200	Basic industries & materials	20	66	1.71	8,355,329	Nonferrous metal products	1	4	49.95	286,676
ALZA CORP.....	385	30,600	Medical substances & devices	59	83	0.15	19,849,094	Drugs: pharmaceutical preparations	28	38	0.19	15,733,395
AMERICA ONLINE INC.....	237	58,208	Information & electronics	109	217	0.13	45,823,950	Multiple & miscellaneous computer & data processing services	4	5	10.77	540,442
AMERICAN HOME PRODUCTS CORP.....	14	1,558,035	Medical substances & devices	4	83	7.85	19,849,094	Drugs: pharmaceutical preparations	4	38	9.90	15,733,395
AMERN STANDARD CO INC.....	152	112,000	Machinery & electrical equipment	14	51	1.59	7,038,500	Machinery (indus., farm, services, mining & construction)	9	40	2.82	3,967,844
AMGEN INC.....	40	630,800	Medical substances & devices	11	83	3.18	19,849,094	Drugs: biological products, except diagnostic substances	1	19	41.92	1,504,594
AMOCO CORP.....	119	151,000	Basic industries & materials	17	66	1.81	8,355,329	Oil & gas extraction: petrol. refining & related ind.	7	13	6.10	2,474,105

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AMP INC.....	64	319,600	Information & electronics	28	217	0.70	45,823,950	Electronic components (semiconductors, coils, etc.)	5	35	4.81	6,648,235
AMYLIN PHARMACEUTICALS INC.....	189	82,281	Medical substances & devices	26	83	0.41	19,849,094	Drugs: pharmaceutical preparations	14	38	0.52	15,733,395
ANALOG DEVICES.....	93	196,148	Information & electronics	41	217	0.43	45,823,950	Electronic components (semiconductors, coils, etc.)	8	35	2.95	6,648,235
ANALOGIC CORP.....	348	37,063	Information & electronics	149	217	0.08	45,823,950	Laboratory controlling & measuring instruments	18	23	1.53	2,423,390
ANDREW CORP.....	324	41,076	Basic industries & materials	54	66	0.49	8,355,329	Nonferrous metal products	3	4	14.33	286,676
APPLE COMPUTER INC.....	48	485,000	Information & electronics	17	217	1.06	45,823,950	Electronic computers & computer terminals	5	12	4.15	11,093,953
APPLIED MAGNETICS CORP.....	268	52,532	Information & electronics	115	217	0.11	45,823,950	Electronic components (semiconductors, coils, etc.)	17	35	0.79	6,648,235
APPLIED MATERIALS INC.....	42	567,612	Machinery & electrical equipment	3	51	8.06	7,038,500	Machinery (indus., farm, services, mining & construction)	1	40	14.31	3,967,844
ARCO CHEMICAL CO.....	190	82,000	Chemicals	14	43	1.20	6,821,613	Industrial chem.; plastic & other synthetic materials	10	22	1.91	4,295,342
ARMSTRONG WORLD INDS INC.....	288	47,800	Basic industries & materials	48	66	0.57	8,355,329	Rubber & misc. plastic prod. (tires, plastic footwear, etc.)	3	5	8.62	554,720
ARTESYN TECHNOLOGIES INC.....	395	30,032	Information & electronics	169	217	0.07	45,823,950	Electronic components (semiconductors, coils, etc.)	28	35	0.45	6,648,235
ARVIN INDUSTRIES INC.....	454	25,300	Motor vehicles & other surface transportation equipment	20	22	0.14	18,380,209	Motor vehicles & motor vehicle equipment	15	16	0.14	18,093,401
ASCEND COMMUNICATIONS INC.....	117	155,986	Information & electronics	52	217	0.34	45,823,950	Computer networking communications equip.	7	15	7.65	2,620,503
ASHLAND INC.....	407	29,000	Basic industries & materials	62	66	0.35	8,355,329	Oil & gas extraction: petrol. refining & related ind.	13	13	1.17	2,474,105

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ASPECT													
TELECOMMUNICATIONS.....	302	45,723	Information & electronics	127	217	0.10	45,823,950	Modems & other wired telephone equipment	6	14	1.14	4,010,990	
ASPEN TECHNOLOGY INC.....	381	31,153	Information & electronics	162	217	0.07	45,823,950	Prepackaged software	38	58	0.47	6,619,062	
AT&T CORP.....	30	829,000	Information & electronics	11	217	1.81	45,823,950	Communications serv. (phone, satellite, radio/TV, cable, etc.)	1	5	78.67	1,053,727	
ATL ULTRASOUND INC.....	231	59,710	Medical substances & devices	32	83	0.30	19,849,094	Medical instruments	10	20	2.96	2,018,146	
ATLANTIC RICHFIELD CO.....	143	120,000	Basic industries & materials	21	66	1.44	8,355,329	Oil & gas extraction; petrol. refining & related ind.	9	13	4.85	2,474,105	
ATMEL CORP.....	137	122,896	Information & electronics	65	217	0.27	45,823,950	Electronic components (semiconductors, coils, etc.)	9	35	1.85	6,648,235	
AUSPEX SYSTEMS INC.....	376	31,803	Information & electronics	160	217	0.07	45,823,950	Computer networking communications equip.	13	15	1.56	2,620,503	
AUTODESK INC.....	140	122,419	Information & electronics	68	217	0.27	45,823,950	Prepackaged software	13	58	1.85	6,619,062	
AUTOMATIC DATA PROCESSING.....	68	296,544	Information & electronics	30	217	0.65	45,823,950	Multiple & miscellaneous computer & data processing services	1	5	54.87	540,442	
AVANT CORP.....	401	29,559	Information & electronics	171	217	0.06	45,823,950	Prepackaged software	42	58	0.45	6,619,062	
AVERY DENNISON CORP.....	226	61,100	Basic industries & materials	36	66	0.73	8,355,329	Paper & allied products	4	7	4.03	1,515,944	
AVID TECHNOLOGY INC.....	198	74,363	Information & electronics	96	217	0.16	45,823,950	Ophthalmic goods, photogrp. equip. & clocks	5	7	2.84	2,616,313	
AVIRON.....	475	24,254	Medical substances & devices	79	83	0.12	19,849,094	Drugs: biological products, except diagnostic substances	19	19	1.61	1,504,594	
AVON PRODUCTS.....	397	29,900	Chemicals	34	43	0.44	6,821,613	Other chem. (soaps, ink, paints, fertilizers, explosives, etc.)	17	21	1.18	2,526,271	
AXYS PHARMACEUTICALS INC.....	383	31,050	Medical substances & devices	58	83	0.16	19,849,094	Drugs: pharmaceutical preparations	27	38	0.20	15,733,395	
BAAN COMPANY NV.....	177	90,849	Information & electronics	86	217	0.20	45,823,950	Prepackaged software	18	58	1.37	6,619,062	

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BAKER-HUGHES INC.....	232	59,500	Machinery & electrical equipment	20	51	0.85	Machinery (indus., farm, services, mining & construction)	14	40	1.50	3,967,844
BARD (C.R.) INC.....	185	85,800	Medical substances & devices	25	83	0.43	Medical instruments	7	20	4.25	2,018,146
BARRA INC.....	409	28,914	Information & electronics	177	217	0.06	Multiple & miscellaneous computer & data processing services	5	5	5.35	540,442
BAUSCH & LOMB INC.....	214	67,500	Information & electronics	100	217	0.15	Ophthalmic goods, photogroph. equip. & clocks	6	7	2.58	2,616,313
BAXTER INTERNATIONAL INC.....	59	392,000	Medical substances & devices	13	83	1.97	Medical instruments	1	20	19.42	2,018,146
BAY NETWORKS INC.....	71	269,800	Information & electronics	32	217	0.59	Computer networking communications equip.	3	15	13.23	2,620,503
BE AEROSPACE INC.....	304	45,685	Basic industries & materials	51	66	0.55	Lumber, wood products, & furniture	6	6	8.41	543,085
BEA SYSTEMS INC.....	314	43,008	Information & electronics	132	217	0.09	Prepackaged software	30	58	0.65	6,619,062
BECKMAN COULTER INC.....	136	123,600	Information & electronics	64	217	0.27	Laboratory controlling & measuring instruments	7	23	5.10	2,423,390
BECTON DICKINSON & CO.....	101	180,626	Medical substances & devices	18	83	0.91	Medical instruments	5	20	8.95	2,018,146
BELL & HOWELL COMPANY.....	344	38,321	Information & electronics	146	217	0.08	Calculating/accounting mach. & office machines, nec	3	4	18.21	210,468
BERG ELECTRONICS CORP.....	416	28,400	Information & electronics	179	217	0.06	Electronic components (semiconductors, coils, etc.)	30	35	0.43	6,648,235
BEST FOODS.....	218	66,000	Basic industries & materials	34	66	0.79	Food & kindred products: tobacco products	7	9	5.56	1,187,900
BETZDEARBORN INC.....	340	38,800	Chemicals	28	43	0.57	Other chem. (soaps, ink, paints, fertilizers, explosives, etc.)	13	21	1.54	2,526,271
BIOGEN INC.....	126	145,501	Medical substances & devices	19	83	0.73	Drugs: biological products, except diagnostic substances	2	19	9.67	1,504,594
BIO-RAD LABS -CL A.....	296	46,138	Information & electronics	124	217	0.10	Laboratory controlling & measuring instruments	14	23	1.90	2,423,390

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BLACK & DECKER CORP.....	164	99,100	15	Machinery & electrical equipment	51	1.41	7,038,500	10	Machinery (indus., farm, services, mining & construction)	40	2.50	3,967,844
BMC SOFTWARE INC.....	171	94,923	82	Information & electronics	217	0.21	45,823,950	16	Prepackaged software	58	1.43	6,619,062
BOEING CO.....	11	1,924,000	1	Aircraft, guided missiles & space vehicles	8	41.17	4,672,800	1	Aircraft, guided missiles & space vehicles	8	41.17	4,672,800
BOOLE & BABBAGE INC.....	448	25,881	195	Information & electronics	217	0.06	45,823,950	53	Prepackaged software	58	0.39	6,619,062
BORDEN INC.....	462	24,900	40	Chemicals	43	0.37	6,821,613	21	Industrial chem.; plastic & other synthetic materials	22	0.58	4,295,342
BORG WARNER AUTO.....	235	59,000	10	Motor vehicles & other surface transportation equipment	22	0.32	18,380,209	9	Motor vehicles & motor vehicle equipment	16	0.33	18,093,401
BOSTON SCIENTIFIC CORP.....	92	196,669	17	Medical substances & devices	83	0.99	19,849,094	4	Medical instruments	20	9.75	2,018,146
BREED TECHNOLOGIES INC.....	353	36,121	18	Motor vehicles & other surface transportation equipment	22	0.20	18,380,209	14	Motor vehicles & motor vehicle equipment	16	0.20	18,093,401
BRISTOL MYERS SQUIBB.....	16	1,385,000	5	Medical substances & devices	83	6.98	19,849,094	5	Drugs: pharmaceutical preparations	38	8.80	15,733,395
BROADBAND TECHNOLOGIES INC.....	421	28,062	183	Information & electronics	217	0.06	45,823,950	12	Modems & other wired telephone equipment	14	0.70	4,010,990
BRODERBUND SOFTWARE INC.....	213	67,767	99	Information & electronics	217	0.15	45,823,950	20	Prepackaged software	58	1.02	6,619,062
BRUNSWICK CORP.....	182	89,400	8	Motor vehicles & other surface transportation equipment	22	0.49	18,380,209	1	Ships, trains, motorcycles, bicycles, campers, military tanks, etc.	6	31.17	286,808
BURR-BROWN CORP.....	364	33,951	156	Information & electronics	217	0.07	45,823,950	26	Electronic components (semiconductors, coils, etc.)	35	0.51	6,648,235
BUSH BOAKE ALLEN INC.....	488	23,640	43	Chemicals	43	0.35	6,821,613	22	Industrial chem.; plastic & other synthetic materials	22	0.55	4,295,342
CABLETRON SYSTEMS.....	99	181,777	44	Information & electronics	217	0.40	45,823,950	4	Computer networking communications equip.	15	8.92	2,620,503
CADENCE DESIGN SYS INC.....	122	146,946	54	Information & electronics	217	0.32	45,823,950	7	Prepackaged software	58	2.22	6,619,062

See SOURCE at end of table

Table 2. Alphabetical list of top 500 corporations in R&D spending: 1997

	Status in major sector				Status in detailed sector					
	Rank among top 500 in R&D [In thousands of dollars]	Major sector	Rank among top 500 firms in the same major sector	Number of top 500 firms in the same major sector	Percent of R&D among top 500 in the same major sector	Major sector R&D total [In thousands of dollars]	Rank among top 500 firms in the same detailed sector	Number of top 500 firms in the same detailed sector	Percent of R&D among top 500 in the same detailed sector	Detailed sector R&D total [In thousands of dollars]
Corporation (alphabetical order)										
CALCOMP TECHNOLOGY INC.....	494	Information & electronics	215	217	0.05	45,823,950	7	7	7.17	325,349
CALLAWAY GOLF CO.....	389	Basic industries & materials	61	66	0.36	8,355,329		4	8.14	372,432
CAMCO INTERNATIONAL INC.....	366	Machinery & electrical equipment	38	51	0.47	7,038,500	29	40	0.84	3,967,844
CAMPBELL SOUP CO.....	196	Basic industries & materials	28	66	0.92	8,355,329		5	6.48	1,187,900
CARTER-WALLACE INC.....	412	Chemicals	37	43	0.42	6,821,613	19	21	1.14	2,526,271
CASE CORP.....	94	Machinery & electrical equipment	9	51	2.78	7,038,500	6	40	4.94	3,967,844
CATERPILLAR INC.....	45	Machinery & electrical equipment	4	51	7.50	7,038,500	2	40	13.31	3,967,844
C-CUBE MICROSYSTEMS INC.....	222	Information & electronics	105	217	0.14	45,823,950	2	7	19.73	325,349
CELL GENESYS INC.....	349	Medical substances & devices	51	83	0.19	19,849,094	9	19	2.45	1,504,594
CELL THERAPEUTICS INC.....	434	Medical substances & devices	69	83	0.14	19,849,094	32	38	0.17	15,733,395
CELLNET DATA SYSTEMS INC.....	431	General services	4	5	13.25	207,689	1	2	52.34	52,582
CENTOCOR INC.....	211	Medical substances & devices	30	83	0.35	19,849,094	5	19	4.56	1,504,594
CEPHALON INC.....	274	Medical substances & devices	42	83	0.26	19,849,094	20	38	0.33	15,733,395
CERIDIAN CORP.....	206	Engineering, accounting, & research/testing services	1	3	50.76	138,309	1	3	50.76	138,309
CERNER CORP.....	352	Information & electronics	151	217	0.08	45,823,950	5	6	8.38	431,256

See SOURCE at end of table

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CHEKFREE HOLDINGS CORP.....	108	172,869	48	217	0.38	45,823,950	6	58	2.61	6,619,062
CHEVRON CORP.....	103	179,000	12	66	2.14	8,355,329				
CHIPS & TECHNOLOGIES INC.....	486	23,665	210	217	0.05	45,823,950				
CHIRON CORP.....	69	296,455	15	83	1.49	19,849,094				
CHRYSLER CORP.....	12	1,700,000								
CIENA CORP.....	495	23,308	3	22	9.25	18,380,209	3	16	9.40	18,093,401
CINCINNATI MILACRON INC.....	280	50,100	216	217	0.05	45,823,950				
CIRRUS LOGIC INC.....	102	179,552	28	51	0.71	7,038,500				
CISCO SYSTEMS INC.....	37	698,169	45	217	0.39	45,823,950				
COLORIX CO/DE.....	278	50,489	15	217	1.52	45,823,950				
CMG INFORMATION SERVICES INC.....	458	25,058	21	43	0.74	6,821,613				
COHERENT INC.....	284	48,721	5	5	12.07	207,689				
COLGATE-PALMOLIVE CO.....	111	169,400	121	217	0.11	45,823,950				
COLTEC INDUSTRIES.....	292	46,548	9	43	2.48	6,821,613				

See SOURCE at end of table

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COMPAQ COMPUTER CORP.....	32	817,000	Information & electronics	13	217	1.78	45,823,950	Electronic computers & computer terminals	4	12	7.00	11,093,953
COMPUTER ASSOCIATES INTL INC.....	61	369,000	Information & electronics	26	217	0.81	45,823,950	Prepackaged software	3	58	5.57	6,619,062
COMPUWARE CORP.....	238	57,576	Information & electronics	110	217	0.13	45,823,950	Prepackaged software	23	58	0.87	6,619,062
COMVERSE TECHNOLOGY INC.....	341	38,659	Information & electronics	143	217	0.08	45,823,950	Modems & other wired telephone equipment	8	14	0.96	4,010,990
COOPER INDUSTRIES INC.....	227	60,900	Machinery & electrical equipment	19	51	0.87	7,038,500	Electrical equipment (industrial & household)	6	11	1.98	3,070,656
COR THERAPEUTICS INC.....	287	47,831	Medical substances & devices	44	83	0.24	19,849,094	Drugs: pharmaceutical preparations	22	38	0.30	15,733,395
CORNING INC.....	74	250,700	Basic industries & materials	6	66	3.00	8,355,329	Stone, clay, glass, & concrete products	1	5	60.81	412,266
CRANE CO.....	289	47,300	General services	2	5	22.77	207,689	Wholesale & retail trade	1	2	54.30	87,107
CREATIVE BIOMOLECULES INC.....	457	25,122	Medical substances & devices	74	83	0.13	19,849,094	Drugs: biological products, except diagnostic substances	18	19	1.67	1,504,594
CREDENCE SYSTEMS CORP.....	310	43,372	Information & electronics	130	217	0.09	45,823,950	Laboratory controlling & measuring instruments	15	23	1.79	2,423,390
CROMPTON & KNOWLES CORP.....	259	53,611	Chemicals	19	43	0.79	6,821,613	Industrial chem.; plastic & other synthetic materials	14	22	1.25	4,295,342
CROWN CORK & SEAL CO INC.....	263	53,100	Basic industries & materials	45	66	0.64	8,355,329	Fabricated metal products, except machinery & transp. eq.	5	6	10.45	508,038
CUMMINS ENGINE.....	75	250,000	Machinery & electrical equipment	7	51	3.55	7,038,500	Machinery (indus., farm, services, mining & construction)	4	40	6.30	3,967,844
CYMER INC.....	459	24,971	Machinery & electrical equipment	45	51	0.35	7,038,500	Machinery (indus., farm, services, mining & construction)	35	40	0.63	3,967,844
CYPRESS SEMICONDUCTOR CORP.....	173	93,842	Information & electronics	83	217	0.20	45,823,950	Electronic components (semiconductors, coils, etc.)	11	35	1.41	6,648,235

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Table 2. Alphabetical list of top 500 corporations in R&D spending: 1997

Corporation (alphabetical order)	Rank among top 500 in R&D	R&D [In thousands of dollars]	Status in major sector				Status in detailed sector					
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CYTEC INDUSTRIES INC.....	308	44,700	Chemicals	22	43	0.66	6,821,613	Other chem. (soaps, ink, paints, fertilizers, explosives, etc.)	8	21	1.77	2,526,271
CYTOGEN CORP.....	474	24,258	Medical substances & devices	78	83	0.12	19,849,094	Drugs: in vitro, in vivo diagnostic substances	6	6	4.09	592,959
CYTOTHERAPEUTICS INC.....	437	26,947	Medical substances & devices	71	83	0.14	19,849,094	Drugs: biological products, except diagnostic substances	17	19	1.79	1,504,594
DALLAS SEMICONDUCTOR CORP.....	298	46,078	Information & electronics	126	217	0.10	45,823,950	Electronic components (semiconductors, coils, etc.)	20	35	0.69	6,648,235
DANA CORP.....	96	193,000	Motor vehicles & other surface transportation equipment	6	22	1.05	18,380,209	Motor vehicles & motor vehicle equipment	6	16	1.07	18,093,401
DANAHER CORP.....	242	57,008	Basic industries & materials	41	66	0.68	8,355,329	Fabricated metal products, except machinery & transp. eq.	4	6	11.22	508,038
DATA GENERAL CORP.....	154	109,984	Information & electronics	75	217	0.24	45,823,950	Computer storage devices	7	9	4.22	2,607,477
DATASCOPE CORP.....	438	26,815	Medical substances & devices	72	83	0.14	19,849,094	Medical instruments	17	20	1.33	2,018,146
DEERE & CO.....	57	412,300	Machinery & electrical equipment	5	51	5.86	7,038,500	Machinery (indus., farm, services, mining & construction)	3	40	10.39	3,967,844
DEKALB GENETICS CORP -CL B.....	239	57,300	Basic industries & materials	39	66	0.69	8,355,329	Agr. services; forestry; fishing; mining; construction	2	2	28.18	203,300
DELL COMPUTER CORP.....	127	145,000	Information & electronics	57	217	0.32	45,823,950	Electronic computers & computer terminals	9	12	1.24	11,093,953
DEPUY INC.....	415	28,419	Medical substances & devices	64	83	0.14	19,849,094	Medical instruments	15	20	1.41	2,018,146
DETROIT DIESEL CORP.....	167	97,500	Machinery & electrical equipment	16	51	1.39	7,038,500	Machinery (indus., farm, services, mining & construction)	11	40	2.46	3,967,844
DEXTER CORP.....	255	54,021	Basic industries & materials	44	66	0.65	8,355,329	Textile & apparel products	1	2	70.07	77,091
DIALOGIC CORP.....	275	51,530	Information & electronics	118	217	0.11	45,823,950	Computer networking communications equip.	10	15	2.53	2,620,503

See SOURCE at end of table

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DIAMOND MULTIMEDIA SYS INC.....	463	24,886	Information & electronics	200	217	0.05	45,823,950	Detailed sector	6	7	7.65	325,349
DIEBOLD INC.....	305	45,184	Information & electronics	128	217	0.10	45,823,950	Computer peripheral equip. (printers, scanners, etc.)	2	4	21.47	210,468
DIGITAL EQUIPMENT.....	26	1,014,044	Information & electronics	10	217	2.21	45,823,950	Calculating/accounting mach. & office machines, nec	1	9	38.89	2,607,477
DONNELLY CORP.....	370	32,492	Basic industries & materials	58	66	0.39	8,355,329	Computer storage devices	3	5	7.88	412,266
DOVER CORP.....	148	114,392	Machinery & electrical equipment	13	51	1.63	7,038,500	Stone, clay, glass, & concrete products	8	40	2.88	3,967,844
DOW CHEMICAL.....	34	785,000	Chemicals	4	43	11.51	6,821,613	Machinery (indus., farm, services, mining & construction)	3	22	18.28	4,295,342
DOW JONES & CO INC.....	146	116,420	Basic industries & materials	23	66	1.39	8,355,329	Industrial chem.; plastic & other synthetic materials	1	2	73.00	159,472
DRESSER INDUSTRIES INC.....	143	120,000	Basic industries & materials	21	66	1.44	8,355,329	Printing, publishing, & allied industries	9	13	4.85	2,474,105
DSC COMMUNICATIONS CORP.....	73	252,089	Information & electronics	34	217	0.55	45,823,950	Oil & gas extraction; petrol. refining & related ind.	2	14	6.28	4,010,990
DU PONT (E) DE NEMOURS.....	22	1,142,200	Chemicals	2	43	16.74	6,821,613	Modems & other wired telephone equipment	1	22	26.59	4,295,342
EASTMAN CHEMICAL CO.....	98	191,000	Chemicals	7	43	2.80	6,821,613	Industrial chem.; plastic & other synthetic materials	5	22	4.45	4,295,342
EASTMAN KODAK CO.....	25	1,047,700	Information & electronics	9	217	2.29	45,823,950	Industrial chem.; plastic & other synthetic materials	2	7	40.04	2,616,313
EATON CORP.....	65	319,000	Machinery & electrical equipment	6	51	4.53	7,038,500	Ophthalmic goods; photograph. equip. & clocks	3	11	10.39	3,070,656
ECHLIN INC.....	271	51,844	Motor vehicles & other surface transportation equipment	15	22	0.28	18,380,209	Electrical equipment (industrial & household)	12	16	0.29	18,093,401

See SOURCE at end of table

Table 2. Alphabetical list of top 500 corporations in R&D spending: 1997

Corporation (alphabetical order)	Rank among top 500 in R&D	R&D [In thousands of dollars]	Status in major sector				Status in detailed sector			
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ECOLAB INC.....	387	30,420	33	43	0.45	6,821,613	16	21	1.20	2,526,271
EDWARDS JD & CO.....	228	60,591	108	217	0.13	45,823,950	22	58	0.92	6,619,062
EG&G INC.....	307	44,907	2	3	32.47	138,309	2	3	32.47	138,309
ELECTRONIC ARTS INC.....	124	146,199	56	217	0.32	45,823,950	9	58	2.21	6,619,062
ELECTRONICS FOR IMAGING INC.....	332	40,318	139	217	0.09	45,823,950	12	15	1.98	2,620,503
EMC CORP/IMA.....	82	220,884	37	217	0.48	45,823,950	4	9	8.47	2,607,477
EMERSON ELECTRIC CO.....	55	445,100	24	217	0.97	45,823,950	2	23	18.37	2,423,390
ENCORE COMPUTER CORP.....	481	23,953	207	217	0.05	45,823,950	12	12	0.21	11,093,953
ENGELHARD CORP.....	225	61,400	35	66	0.73	8,355,329	2	4	21.42	286,676
ESS TECHNOLOGY INC.....	402	29,471	172	217	0.06	45,823,950	29	35	0.44	6,648,235
ETEC SYSTEMS INC.....	361	34,373	37	51	0.49	7,038,500	28	40	0.87	3,967,844
ETHYL CORP.....	321	42,168	25	43	0.62	6,821,613	15	22	0.98	4,295,342
EVANS & SUTHERLAND CMP CORP.....	452	25,492	44	51	0.36	7,038,500	10	11	0.83	3,070,656
EXABYTE CORP.....	326	40,909	135	217	0.09	45,823,950	9	9	1.57	2,607,477
EXCEL INDUSTRIES INC.....	455	25,245	21	22	0.14	18,380,209	16	16	0.14	18,093,401
EXXON CORP.....	44	529,000	3	66	6.33	8,355,329	1	13	21.38	2,474,105

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FERRO CORP.....	441	26,600	39	43	0.39	6,821,613	20	22	0.62	4,295,342
FILENET CORP.....	337	39,575	141	217	0.09	45,823,950	32	58	0.60	6,619,062
FMC CORP.....	107	174,000	8	43	2.55	6,821,613	3	21	6.89	2,526,271
FORD MOTOR CO.....	2	6,327,000	2	22	34.42	18,380,209	2	16	34.97	18,093,401
FORE SYSTEMS INC.....	216	66,779	101	217	0.15	45,823,950	9	15	3.28	2,620,503
FORT JAMES CORP.....	327	40,900	56	66	0.49	8,355,329	7	7	2.70	1,515,944
FORTUNE BRANDS INC.....	291	46,600	49	66	0.56	8,355,329	6	6	9.17	508,038
FSI INTL INC.....	335	39,713	35	51	0.56	7,038,500	26	40	1.00	3,967,844
FTP SOFTWARE INC.....	436	27,044	187	217	0.06	45,823,950	50	58	0.41	6,619,062
FULLER (H. B.) CO.....	465	24,830	41	43	0.36	6,821,613	20	21	0.98	2,526,271
GENCORP INC.....	424	28,000	8	8	0.60	4,672,800	8	8	0.60	4,672,800
GENENTECH INC.....	58	403,327	12	83	2.03	19,849,094	11	38	2.56	15,733,395
GENERAL DATACOMM INDS.....	328	40,876	136	217	0.09	45,823,950	7	14	1.02	4,010,990
GENERAL DYNAMICS CORP.....	250	55,000	11	22	0.30	18,380,209	2	6	19.18	286,808
GENERAL ELECTRIC CO.....	15	1,480,000	1	51	21.03	7,038,500	1	11	48.20	3,070,656

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GENERAL INSTRUMENT CORP.....	89	207,826	Information & electronics	40	217	0.45	45,823,950	Detailed sector	3	10	5.73	3,625,457
GENERAL MOTORS CL H.....	142	120,400	Information & electronics	70	217	0.26	45,823,950	Household audio & video equipment, & audio recordings	1	3	52.40	229,751
GENERAL MOTORS CORP.....	1	8,200,000	Motor vehicles & other surface transportation equipment	1	22	44.61	18,380,209	Motor vehicles & motor vehicle equipment	1	16	45.32	18,093,401
GENERAL SCANNING INC.....	368	32,902	Machinery & electrical equipment	39	51	0.47	7,038,500	Machinery (indus., farm, services, mining & construction)	30	40	0.83	3,967,844
GENERAL SIGNAL CORP.....	303	45,700	Machinery & electrical equipment	31	51	0.65	7,038,500	Electrical equipment (industrial & household)	9	11	1.49	3,070,656
GENSIA SICOR INC.....	249	55,318	Medical substances & devices	36	83	0.28	19,849,094	Drugs: pharmaceutical preparations	15	38	0.35	15,733,395
GENZYME CORP.....	199	74,200	Medical substances & devices	28	83	0.37	19,849,094	Drugs: biological products, except diagnostic substances	4	19	4.93	1,504,594
GEOTEK COMMUNICATIONS.....	336	39,609	Information & electronics	140	217	0.09	45,823,950	Communications serv. (phone, satellite, radio/TV, cable, etc.)	3	5	3.76	1,053,727
GILEAD SCIENCES INC.....	234	59,162	Medical substances & devices	33	83	0.30	19,849,094	Drugs: biological products, except diagnostic substances	6	19	3.93	1,504,594
GILLETTE CO.....	84	212,000	Basic industries & materials	9	66	2.54	8,355,329	Fabricated metal products, except machinery & transp. eq.	1	6	41.73	508,038
GLENAYRE TECHNOLOGIES INC.....	331	40,425	Information & electronics	138	217	0.09	45,823,950	Radio, TV, cell phone, & satellite communication eq.	6	10	1.12	3,625,457
GOODRICH (B F) CO.....	162	101,800	Aircraft, guided missiles & space vehicles	6	8	2.18	4,672,800	Aircraft, guided missiles & space vehicles	6	8	2.18	4,672,800
GOODYEAR TIRE & RUBBER CO.....	60	384,100	Basic industries & materials	5	66	4.60	8,355,329	Rubber & misc. plastic prod. (tires, plastic footwear, etc.)	1	5	69.24	554,720
GRACE (W R) & CO.....	320	42,400	Chemicals	24	43	0.62	6,821,613	Other chem. (soaps, ink, paints, fertilizers, explosives, etc.)	10	21	1.68	2,526,271

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GREAT LAKES CHEMICAL CORP.....	322	42,000	26	43	0.62	6,821,613	11	21	1.66	2,526,271
GTE CORP.....	141	122,000	69	217	0.27	45,823,950	3	20	10.32	2,018,146
GUIDANT CORP.....	88	208,300	16	83	1.05	19,849,094	29	38	0.19	15,733,395
GUILFORD PHARMACEUTICAL INC.....	391	30,293	60	66	1.97	8,355,329	6	13	6.66	2,474,105
HALLIBURTON CO.....	112	164,700	14	217	0.06	45,823,950	44	58	0.44	6,619,062
HARBINGER CORP.....	404	29,196	174	217	0.29	18,380,209	3	6	18.58	286,808
HARLEY-DAVIDSON INC.....	261	53,300	13	22	0.15	45,823,950	2	3	28.92	229,751
HARMAN INTERNATIONAL INDS.....	217	66,451	102	217	0.57	7,038,500	25	40	1.01	3,967,844
HARNISCHFEGGER INDUSTRIES INC.....	333	40,094	34	51	0.38	45,823,950	4	10	4.82	3,625,457
HARRIS CORP.....	106	174,900	47	217	1.85	8,355,329	2	4	41.54	372,432
HASBRO INC.....	118	154,710	16	66	0.21	45,823,950	3	6	22.44	431,256
HBO & CO.....	168	96,759	80	217	0.78	6,821,613	6	21	2.10	2,526,271
HERCULES INC.....	265	53,000	20	43	0.33	8,355,329	9	9	2.32	1,187,900
HERSHEY FOODS CORP.....	432	27,500	65	66	6.72	45,823,950	2	12	26.36	11,093,953
HEWLETT-PACKARD CO.....	5	3,078,000	3	217	0.59	8,355,329	5	6	9.02	543,085
HILLENBRAND INDUSTRIES.....	283	49,000	46	66						

See SOURCE at end of table

Table 2. Alphabetical list of top 500 corporations in R&D spending: 1997

Corporation (alphabetical order)	Rank among top 500 in R&D	R&D [In thousands of dollars]	Status in major sector				Status in detailed sector			
			Rank among top 500 firms in the same major sector	Number of top 500 firms in the same major sector	Percent of R&D among top 500 in the same major sector	Major sector R&D total [In thousands of dollars]	Rank among top 500 firms in the same detailed sector	Number of top 500 firms in the same detailed sector	Percent of R&D among top 500 in the same detailed sector	Detailed sector R&D total [In thousands of dollars]
HONEYWELL INC.....	54	446,600	23	217	0.97	45,823,950	1	23	18.43	2,423,390
HUMAN GENOME SCIENCES INC.....	295	46,140	47	83	0.23	19,849,094	4	6	7.78	592,959
HYBRIDON INC.....	290	46,828	45	83	0.24	19,849,094	7	19	3.11	1,504,594
HYPERION SOFTWARE CORP.....	367	33,046	158	217	0.07	45,823,950	36	58	0.50	6,619,062
I2 TECHNOLOGIES INC.....	285	48,720	122	217	0.11	45,823,950	28	58	0.74	6,619,062
ICOS CORPORATION.....	319	42,783	49	83	0.22	19,849,094	24	38	0.27	15,733,395
IDEC PHARMACEUTICALS CORP.....	372	32,407	55	83	0.16	19,849,094	12	19	2.15	1,504,594
IDX SYSTEMS CORP.....	342	38,602	144	217	0.08	45,823,950	33	58	0.58	6,619,062
ILLINOIS TOOL WORKS.....	269	52,021	25	51	0.74	7,038,500	19	40	1.31	3,967,844
IMATION CORP.....	95	194,900	42	217	0.43	45,823,950	3	7	7.45	2,616,313
IMMUNE RESPONSE CORP/IDE.....	363	34,090	53	83	0.17	19,849,094	11	19	2.27	1,504,594
IMMUNEX CORP.....	155	109,312	21	83	0.55	19,849,094	3	19	7.27	1,504,594
INCONTROL INC.....	461	24,927	76	83	0.13	19,849,094	18	20	1.24	2,018,146
INCYTE PHARMACEUTICALS INC.....	210	68,927	98	217	0.15	45,823,950	3	5	12.75	540,442
INDUS INTERNATIONAL INC.....	430	27,664	186	217	0.06	45,823,950	49	58	0.42	6,619,062
INFINIUM SOFTWARE INC.....	491	23,460	212	217	0.05	45,823,950	57	58	0.35	6,619,062
INFORMIX CORP.....	123	146,310	55	217	0.32	45,823,950	8	58	2.21	6,619,062

See SOURCE at end of table

Table 2. Alphabetical list of top 500 corporations in R&D spending: 1997

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			Rank among top 500 firms in the same major sector	Number of top 500 firms in the same major sector	Percent of R&D among top 500 in the same major sector	Major sector R&D total [In thousands of dollars]	Rank among top 500 firms in the same detailed sector	Number of top 500 firms in the same detailed sector	Percent of R&D among top 500 in the same detailed sector	Detailed sector R&D total [In thousands of dollars]				
INGERSOLL-RAND CO.....	83	215,500												
INHALE THERAPEUTIC SYSTEMS.....	487	23,645	Machinery & electrical equipment	8	51	3.06	7,038,500	Machinery (indus., farm, services, mining & construction)	5	40	5.43	3,967,844		
INSO CORP.....	413	28,760	Medical substances & devices	81	83	0.12	19,849,094	Drugs: pharmaceutical preparations	36	38	0.15	15,733,395		
INTEGRATED CIRCUIT SYSTEMS.....	467	24,717	Information & electronics	178	217	0.06	45,823,950	Prepackaged software	46	58	0.43	6,619,062		
INTEGRATED PROCESS EQ.....	482	23,951	Information & electronics	202	217	0.05	45,823,950	Electronic components (semiconductors, coils, etc.)	33	35	0.37	6,648,235		
INTEGRATED SILICON SOLUTION.....	446	26,179	Machinery & electrical equipment	50	51	0.34	7,038,500	Machinery (indus., farm, services, mining & construction)	40	40	0.60	3,967,844		
INTEL CORP.....	7	2,347,000	Information & electronics	193	217	0.06	45,823,950	Electronic components (semiconductors, coils, etc.)	32	35	0.39	6,648,235		
INTERDIGITAL COMMUN CORP.....	476	24,248	Information & electronics	5	217	5.12	45,823,950	Electronic components (semiconductors, coils, etc.)	1	35	35.30	6,648,235		
INTERGRAPH CORP.....	166	98,073	Finance, insurance, real estate	2	2	29.92	81,048	Finance, insurance, real estate	2	2	29.92	81,048		
INTERNEURON PHARMACEUTICALS.....	257	53,909	Information & electronics	79	217	0.21	45,823,950	Computer integrated systems design	2	6	22.74	431,256		
INTERSOLV.....	477	24,231	Medical substances & devices	38	83	0.27	19,849,094	Drugs: pharmaceutical preparations	17	38	0.34	15,733,395		
INTL BUSINESS MACHINES CORP.....	3	4,307,000	Information & electronics	205	217	0.05	45,823,950	Prepackaged software	56	58	0.37	6,619,062		
INTL FLAVORS & FRAGRANCES.....	172	94,411	Information & electronics	1	217	9.40	45,823,950	Electronic computers & computer terminals	1	12	36.89	11,093,953		
INTL GAME TECHNOLOGY.....	382	31,074	Chemicals	12	43	1.38	6,821,613	Industrial chem.: plastic & other synthetic materials	8	22	2.20	4,295,342		
INTL PAPER CO.....	163	99,900	Basic industries & materials	60	66	0.37	8,355,329	Misc. products (leather, toys, jewelry, musical inst.)	3	4	8.34	372,432		
INTL RECTIFIER CORP.....	354	35,495	Basic industries & materials	25	66	1.20	8,355,329	Paper & allied products	3	7	6.59	1,515,944		
INTUIT INC.....	161	104,027	Information & electronics	152	217	0.08	45,823,950	Electronic components (semiconductors, coils, etc.)	23	35	0.53	6,648,235		
			Information & electronics	77	217	0.23	45,823,950	Prepackaged software	15	58	1.57	6,619,062		

See SOURCE at end of table

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Corporation (alphabetical order)	Rank among top 500 in R&D	R&D [In thousands of dollars]	Status in major sector					Status in detailed sector				
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TOMEGA CORP.....	195	78,026	95	217	0.17	45,823,950	8	9	2.99	2,607,477		
ISIS PHARMACEUTICALS INC.....	460	24,940	75	83	0.13	19,849,094	35	38	0.16	15,733,395		
ITT INDUSTRIES INC.....	46	496,900	5	22	2.70	18,380,209	5	16	2.75	18,093,401		
IVAX CORP.....	260	53,409	39	83	0.27	19,849,094	18	38	0.34	15,733,395		
JOHNS MANVILLE INTL GRP INC.....	380	31,174	59	66	0.37	8,355,329	4	5	7.56	412,266		
JOHNSON & JOHNSON.....	8	2,140,000	1	83	10.78	19,849,094	1	38	13.60	15,733,395		
JOHNSON CONTROLS INC.....	79	232,000	8	66	2.78	8,355,329	1	6	42.72	543,085		
KELLOGG CO.....	159	106,100	24	66	1.27	8,355,329	3	9	8.93	1,187,900		
KEMET CORP.....	485	23,766	209	217	0.05	45,823,950	34	35	0.36	6,648,235		
KENNAMETAL INC.....	478	24,105	48	51	0.34	7,038,500	38	40	0.61	3,967,844		
KIMBERLY-CLARK CORP.....	85	211,800	10	66	2.53	8,355,329	2	7	13.97	1,515,944		
KLA-TENCOR CORP.....	130	134,105	59	217	0.29	45,823,950	5	23	5.53	2,423,390		
KOMAG INC.....	276	51,427	26	51	0.73	7,038,500	7	11	1.67	3,070,656		
KULICKE & SOFFA INDUSTRIES.....	299	46,030	29	51	0.65	7,038,500	21	40	1.16	3,967,844		
LAM RESEARCH CORP.....	110	170,624	11	51	2.42	7,038,500	7	40	4.30	3,967,844		
LAUDER ESTEE COS INC -CL A.....	356	35,300	29	43	0.52	6,821,613	14	21	1.40	2,526,271		
LEAR CORP.....	179	90,400	27	66	1.08	8,355,329						

See SOURCE at end of table

Table 2. Alphabetical list of top 500 corporations in R&D spending: 1997

Corporation (alphabetical order)	Rank among top 500 in R&D	R&D [In thousands of dollars]	Status in major sector				Status in detailed sector			
			Rank among top 500 firms in the same major sector	Number of top 500 firms in the same major sector	Percent of R&D among top 500 in the same major sector	Major sector R&D total [In thousands of dollars]	Rank among top 500 firms in the same detailed sector	Number of top 500 firms in the same detailed sector	Percent of R&D among top 500 in the same detailed sector	Detailed sector R&D total [In thousands of dollars]
LEVEL ONE COMMUNICATIONS INC.....	388	30,398	164	217	0.07	45,823,950	2	6	16.65	543,085
LEXMARK INTL GRP INC -CL A.....	135	128,900	63	217	0.28	45,823,950	27	35	0.46	6,648,235
LILLY (ELI) & CO.....	17	1,382,000	6	83	6.96	19,849,094	1	7	39.62	325,349
LINEAR TECHNOLOGY CORP.....	355	35,401	153	217	0.08	45,823,950	6	38	8.78	15,733,395
LIPOSOME COMPANY INC.....	411	28,894	62	83	0.15	19,849,094	24	35	0.53	6,648,235
LITTON INDUSTRIES INC.....	207	70,122	97	217	0.15	45,823,950	14	19	1.92	1,504,594
LOCKHEED MARTIN CORP.....	33	788,000	3	8	16.86	4,672,800	3	8	16.86	4,672,800
LOGITECH INTL S A -ADR.....	427	27,774	185	217	0.06	45,823,950	4	7	8.54	325,349
LORAL SPACE & COMMUNICATIONS.....	244	56,800	1	2	70.08	81,048	1	2	70.08	81,048
LSI LOGIC CORP.....	80	229,069	36	217	0.50	45,823,950	6	35	3.45	6,648,235
LTX CORP.....	493	23,350	214	217	0.05	45,823,950	23	23	0.96	2,423,390
LUBRIZOL CORP.....	183	88,400	13	43	1.30	6,821,613	9	22	2.06	4,295,342
LUCENT TECHNOLOGIES INC.....	4	3,100,620	2	217	6.77	45,823,950	1	14	77.30	4,010,990
MAGNETEK INC.....	489	23,600	51	51	0.34	7,038,500	11	11	0.77	3,070,656
MALLINCKRODT INC.....	157	108,000	23	83	0.54	19,849,094	2	6	18.21	592,959

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MANUGISTICS GROUP INC.....	377	31,665	Information & electronics	161	217	0.07	45,823,950	Prepackaged software	37	58	0.48	6,619,062
MARCAM SOLUTIONS INC.....	362	34,301	Information & electronics	155	217	0.07	45,823,950	Prepackaged software	35	58	0.52	6,619,062
MARK IV INDUSTRIES INC.....	286	48,500	Basic industries & materials	47	66	0.58	8,355,329	Rubber & misc. plastic prod. (tires, plastic footwear, etc.)	2	5	8.74	554,720
MARQUETTE MEDICAL SYS.....	267	52,594	Medical substances & devices	40	83	0.26	19,849,094	Medical instruments	13	20	2.61	2,018,146
MATRIX PHARMACEUTICAL INC.....	435	27,214	Medical substances & devices	70	83	0.14	19,849,094	Drugs: pharmaceutical preparations	33	38	0.17	15,733,395
MATTEL INC.....	116	156,350	Basic industries & materials	15	66	1.87	8,355,329	Misc. products (leather, toys, jewelry, musical inst.)	1	4	41.98	372,432
MAXIM INTEGRATED PRODUCTS.....	277	51,264	Information & electronics	119	217	0.11	45,823,950	Electronic components (semiconductors, coils, etc.)	19	35	0.77	6,648,235
MAYTAG CORP.....	279	50,201	Machinery & electrical equipment	27	51	0.71	7,038,500	Electrical equipment (industrial & household)	8	11	1.63	3,070,656
MEDIMMUNE INC.....	329	40,669	Medical substances & devices	50	83	0.20	19,849,094	Drugs: biological products, except diagnostic substances	8	19	2.70	1,504,594
MEDTRONIC INC.....	67	297,177	Medical substances & devices	14	83	1.50	19,849,094	Medical instruments	2	20	14.73	2,018,146
MEMC ELECTRONIC								Electronic components	15	35	0.97	6,648,235
MATERIALS INC.....	221	64,457	Information & electronics	104	217	0.14	45,823,950	(semiconductors, coils, etc.)	1	6	26.02	431,256
MENTOR GRAPHICS CORP.....	151	112,227	Information & electronics	73	217	0.24	45,823,950	Computer integrated systems design	3	38	10.70	15,733,395
MERCK & CO.....	13	1,683,700	Medical substances & devices	3	83	8.48	19,849,094	Drugs: pharmaceutical preparations	10	16	0.30	18,093,401
MERITOR AUTOMOTIVE INC.....	256	54,000	Motor vehicles & other surface transportation equipment	12	22	0.29	18,380,209	Motor vehicles & motor vehicle equipment	21	35	0.58	6,648,235
MICROCHIP TECHNOLOGY INC.....	343	38,362	Information & electronics	145	217	0.08	45,823,950	Electronic components (semiconductors, coils, etc.)	7	35	3.14	6,648,235
MICRON TECHNOLOGY INC.....	87	208,900	Information & electronics	39	217	0.46	45,823,950	Electronic components (semiconductors, coils, etc.)	45	58	0.44	6,619,062
MICROPROSE INC.....	406	29,038	Information & electronics	176	217	0.06	45,823,950	Prepackaged software	1	58	29.08	6,619,062
MICROSOFT CORP.....	10	1,925,000	Information & electronics	6	217	4.20	45,823,950	Prepackaged software				

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MIDWAY GAMES INC.....	248	55,941	Information & electronics	112	217	0.12	45,823,950	24	58	0.85	6,619,062
MILLENNIUM CHEMICALS INC.....	424	28,000	Chemicals	38	43	0.41	6,821,613	19	22	0.65	4,295,342
MILLENNIUM PHARMACTLS INC.....	197	74,828	Medical substances & devices	27	83	0.38	19,849,094	3	6	12.62	592,959
MILLIPORE CORP.....	245	56,299	Information & electronics	111	217	0.12	45,823,950	11	23	2.32	2,423,390
MINNESOTA MINING & MFG CO.....	27	1,002,000	Basic industries & materials	1	66	11.99	8,355,329	1	7	66.10	1,515,944
MOBIL CORP.....	78	234,000	Basic industries & materials	7	66	2.80	8,355,329	3	13	9.46	2,474,105
MOLEX INC.....	188	83,843	Information & electronics	91	217	0.18	45,823,950	2	22	21.86	4,295,342
MONSANTO CO.....	28	939,000	Chemicals	3	43	13.77	6,821,613	5	21	2.33	2,526,271
MORTON INTERNATIONAL INC.....	236	58,800	Chemicals	18	43	0.86	6,821,613	1	10	75.80	3,625,457
MOTOROLA INC.....	6	2,748,000	Information & electronics	4	217	6.00	45,823,950	23	38	0.29	15,733,395
MYLAN LABORATORIES.....	294	46,278	Medical substances & devices	46	83	0.23	19,849,094	4	9	8.00	1,187,900
NABISCO HLDGS CORP-CL A.....	170	95,000	Basic industries & materials	26	66	1.14	8,355,329	34	40	0.70	3,967,844
NACCO INDUSTRIES-CL A.....	426	27,900	Machinery & electrical equipment	43	51	0.40	7,038,500	9	21	1.70	2,526,271
NALCO CHEMICAL CO.....	315	43,000	Chemicals	23	43	0.63	6,821,613	40	58	0.46	6,619,062
NATIONAL INSTRUMENTS CORP.....	390	30,296	Information & electronics	165	217	0.07	45,823,950	3	35	7.25	6,648,235
NATIONAL SEMICONDUCTOR CORP.....	49	482,000	Information & electronics	18	217	1.05	45,823,950				

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NAVISTAR INTERNATIONAL.....	175	92,000	Motor vehicles & other surface transportation equipment	7	22	0.50	18,380,209	Motor vehicles & motor vehicle equipment	7	16	0.51	18,093,401
NCR CORP.....	53	447,000	Information & electronics	22	217	0.98	45,823,950	Electronic computers & computer terminals	7	12	3.83	11,093,953
NETMANAGE INC.....	323	41,313	Information & electronics	134	217	0.09	45,823,950	Prepackaged software	31	58	0.62	6,619,062
NETSCAPE COMMUNICATIONS CORP.....	133	129,900	Information & electronics	61	217	0.28	45,823,950	Prepackaged software	11	58	1.96	6,619,062
NETWORK EQUIPMENT TECH INC.....	309	43,442	Information & electronics	129	217	0.09	45,823,950	Computer networking communications equip.	11	15	2.13	2,620,503
NETWORKS ASSOCIATES INC.....	186	85,021	Information & electronics	90	217	0.19	45,823,950	Prepackaged software	19	58	1.28	6,619,062
NEUREX CORP.....	414	28,474	Medical substances & devices	63	83	0.14	19,849,094	Drugs: biological products, except diagnostic substances	15	19	1.89	1,504,594
NEWPORT NEWS SHIPBUILDING.....	345	38,000	Motor vehicles & other surface transportation equipment	17	22	0.21	18,380,209	Ships, trains, motorcycles, bicycles, campers, military tanks, etc.	4	6	13.25	286,808
NEXSTAR PHARMACEUTICALS.....	282	49,315	Medical substances & devices	43	83	0.25	19,849,094	Drugs: pharmaceutical preparations	21	38	0.31	15,733,395
NORDSON CORP.....	399	29,812	Machinery & electrical equipment	42	51	0.42	7,038,500	Machinery (indus., farm, services, mining & construction)	33	40	0.75	3,967,844
NORTHROP GRUMMAN CORP.....	72	256,000	Information & electronics	33	217	0.56	45,823,950	Search & navigation equipment	2	4	33.35	767,577
NOVELL INC.....	70	282,680	Information & electronics	31	217	0.62	45,823,950	Prepackaged software	4	58	4.27	6,619,062
NOVELLUS SYSTEMS INC.....	180	89,876	Machinery & electrical equipment	17	51	1.28	7,038,500	Machinery (indus., farm, services, mining & construction)	12	40	2.27	3,967,844
OAK TECHNOLOGY INC.....	359	34,660	Information & electronics	154	217	0.08	45,823,950	Electronic components (semiconductors, coils, etc.)	25	35	0.52	6,648,235
OLIN CORP.....	407	29,000	Chemicals	36	43	0.43	6,821,613	Industrial chem.; plastic & other synthetic materials	18	22	0.68	4,295,342
OMNIPONT CORP.....	483	23,932	Information & electronics	208	217	0.05	45,823,950	Communications serv. (phone, satellite, radio/TV, cable, etc.)	5	5	2.27	1,053,727

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ON TECHNOLOGY CORP.....	418	28,359	Information & electronics	181	217	0.06	45,823,950	Prepackaged software	48	58	0.43	6,619,062
OPEN MARKET INC.....	439	26,732	Information & electronics	188	217	0.06	45,823,950	Prepackaged software	51	58	0.40	6,619,062
ORACLE CORP.....	35	719,143	Information & electronics	14	217	1.57	45,823,950	Prepackaged software	2	58	10.86	6,619,062
ORBITAL SCIENCES CORP.....	443	26,355	Information & electronics	190	217	0.06	45,823,950	Search & navigation equipment	4	4	3.43	767,577
OWENS CORNING.....	209	69,000	Basic industries & materials	32	66	0.83	8,355,329	Stone, clay, glass, & concrete products	2	5	16.74	412,266
OWENS-ILLINOIS INC.....	410	28,900	Basic industries & materials	63	66	0.35	8,355,329	Stone, clay, glass, & concrete products	5	5	7.01	412,266
PACCAR INC.....	187	84,000	Motor vehicles & other surface transportation equipment	9	22	0.46	18,380,209	Motor vehicles & motor vehicle equipment	8	16	0.46	18,093,401
PAIRGAIN TECHNOLOGIES INC.....	375	31,982	Information & electronics	159	217	0.07	45,823,950	Modems & other wired telephone				
PALL CORP.....	258	53,747	Machinery & electrical equipment	23	51	0.76	7,038,500	Machinery (indus., farm, services, mining & construction)	17	40	1.35	3,967,844
PARAMETRIC TECHNOLOGY CORP.....	262	53,236	Information & electronics	114	217	0.12	45,823,950	Prepackaged software	25	58	0.80	6,619,062
PARKER-HANNIFIN CORP.....	215	67,169	Basic industries & materials	33	66	0.80	8,355,329	Fabricated metal products, except machinery & transp. eq.	3	6	13.22	508,038
PATHOGENESIS CORP.....	423	28,018	Medical substances & devices	66	83	0.14	19,849,094	Drugs: biological products, except diagnostic substances	16	19	1.86	1,504,594
P-COM INC.....	405	29,127	Information & electronics	175	217	0.06	45,823,950	Radio, TV, cell phone, & satellite communication eq.	7	10	0.80	3,625,457
PEOPLESOFT INC.....	134	129,553	Information & electronics	62	217	0.28	45,823,950	Prepackaged software	12	58	1.96	6,619,062
PERKIN-ELMER CORP.....	131	132,461	Information & electronics	60	217	0.29	45,823,950	Laboratory controlling & measuring instruments	6	23	5.47	2,423,390
PFIZER INC.....	9	1,928,000	Medical substances & devices	2	83	9.71	19,849,094	Drugs: pharmaceutical preparations	2	38	12.25	15,733,395
PHARMACIA & UPJOHN INC.....	20	1,217,000	Medical substances & devices	8	83	6.13	19,849,094	Drugs: pharmaceutical preparations	8	38	7.74	15,733,395
PHILIP MORRIS COS INC.....	43	533,000	Basic industries & materials	2	66	6.38	8,355,329	Food & kindred products: tobacco products	1	9	44.87	1,187,900

See SOURCE at end of table

Table 2. Alphabetical list of top 500 corporations in R&D spending: 1997

Corporation (alphabetical order)	Rank among top 500 in R&D	R&D [In thousands of dollars]	Status in major sector				Status in detailed sector					
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PHILLIPS PETROLEUM CO.....	246	56,000	Basic industries & materials	42	66	0.67	8,355,329	Detailed sector	12	13	2.26	2,474,105
PHOENIX TECHNOLOGIES LTD.....	444	26,349	Information & electronics	191	217	0.06	45,823,950	Prepackaged software	52	58	0.40	6,619,062
PICTURETEL CORP.....	193	79,523	Information & electronics	94	217	0.17	45,823,950	Modems & other wired telephone equipment	5	14	1.98	4,010,990
PIONEER HI-BRED INTERNATIONAL.....	125	146,000	Basic industries & materials	19	66	1.75	8,355,329	Agr. services: forestry; fishing; mining; construction	1	2	71.82	203,300
PITNEY BOWES INC.....	181	89,463	Information & electronics	88	217	0.20	45,823,950	Calculating/accounting mach. & office machines, nec	1	4	42.51	210,468
PITTPWAY CORP/DE -CL A.....	472	24,316	Information & electronics	204	217	0.05	45,823,950	Radio, TV, cell phone, & satellite communication eq.	10	10	0.67	3,625,457
POLARIS INDS INC.....	440	26,722	Motor vehicles & other surface transportation equipment	19	22	0.15	18,380,209	Ships, trains, motorcycles, bicycles, campers, military tanks, etc.	5	6	9.32	286,808
POLAROID CORP.....	138	122,800	Information & electronics	66	217	0.27	45,823,950	Ophthalmic goods; photograph. eq. & docks	4	7	4.69	2,616,313
PPG INDUSTRIES INC.....	75	250,000	Chemicals	5	43	3.66	6,821,613	Other chem. (soaps, ink, paints, fertilizers, explosives, etc.)	2	21	9.90	2,526,271
PRAXAIR INC.....	194	79,000	Chemicals	15	43	1.16	6,821,613	Industrial chem.; plastic & other synthetic materials	11	22	1.84	4,295,342
PREMARK INTERNATIONAL INC.....	300	46,000	Machinery & electrical equipment	30	51	0.65	7,038,500	Machinery (indus., farm, services, mining & construction)	22	40	1.16	3,967,844
PRI AUTOMATION INC.....	469	24,634	Machinery & electrical equipment	46	51	0.35	7,038,500	Machinery (indus., farm, services, mining & construction)	36	40	0.62	3,967,844
PROCTER & GAMBLE CO.....	19	1,282,000	Chemicals	1	43	18.79	6,821,613	Other chem. (soaps, ink, paints, fertilizers, explosives, etc.)	1	21	50.75	2,526,271
PROGRESS SOFTWARE CORP.....	346	37,797	Information & electronics	147	217	0.08	45,823,950	Prepackaged software	34	58	0.57	6,619,062
OAD INC.....	403	29,317	Information & electronics	173	217	0.06	45,823,950	Prepackaged software	43	58	0.44	6,619,062

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QUAKER OATS CO.....	357	34,900	Basic industries & materials	57	66	0.42	8,355,329	Food & kindred products: tobacco products	8	9	2.94	1,187,900
QUALCOMM INC.....	77	235,922	Information & electronics	35	217	0.51	45,823,950	Radio, TV, cell phone, & satellite communication eq.	2	10	6.51	3,625,457
QUANTUM CORP.....	63	321,741	Information & electronics	27	217	0.70	45,823,950	Computer storage devices	3	9	12.34	2,607,477
QUICKTURN DESIGN SYSTEMS INC.....	490	23,499	Information & electronics	211	217	0.05	45,823,950	Laboratory controlling & measuring instruments	21	23	0.97	2,423,390
RALSTON PURINA CO.....	205	70,400	Basic industries & materials	30	66	0.84	8,355,329	Food & kindred products: tobacco products	6	9	5.93	1,187,900
RATIONAL SOFTWARE CORP.....	224	61,560	Information & electronics	107	217	0.13	45,823,950	Prepackaged software	21	58	0.93	6,619,062
RAYCHEM CORP.....	145	119,336	Machinery & electrical equipment	12	51	1.70	7,038,500	Electrical equipment (industrial & household)	5	11	3.89	3,070,656
RAYTHEON CO -CL B.....	56	415,100	Information & electronics	25	217	0.91	45,823,950	Search & navigation equipment	1	4	54.08	767,577
READ-RITE CORP.....	220	64,995	Information & electronics	103	217	0.14	45,823,950	Electronic components (semiconductors, coils, etc.)	14	35	0.98	6,648,235
REGENERON PHARMACEUT.....	429	27,770	Medical substances & devices	67	83	0.14	19,849,094	Drugs: pharmaceutical preparations	30	38	0.18	15,733,395
RELTEC CORP.....	365	33,600	Information & electronics	157	217	0.07	45,823,950	Modems & other wired telephone equipment	9	14	0.84	4,010,990
REVLON CONSUMER PRODUCTS CP.....	400	29,700	Chemicals	35	43	0.44	6,821,613	Other chem. (soaps, ink, paints, fertilizers, explosives, etc.)	18	21	1.18	2,526,271
REYNOLDS & REYNOLDS -CL A.....	313	43,052	Basic industries & materials	52	66	0.52	8,355,329	Printing, publishing, & allied industries	2	2	27.00	159,472
REYNOLDS METALS CO.....	325	41,000	Basic industries & materials	55	66	0.49	8,355,329	Nonferrous metal products	4	4	14.30	286,676
RJR NABISCO HLDGS CORP.....	104	178,000	Basic industries & materials	13	66	2.13	8,355,329	Food & kindred products: tobacco products	2	9	14.98	1,187,900
ROBOTIC VISION SYSTEMS INC.....	492	23,410	Information & electronics	213	217	0.05	45,823,950	Laboratory controlling & measuring instruments	22	23	0.97	2,423,390

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ROCKWELL INTL CORP.....	36	714,000	Machinery & electrical equipment	2	51	10.14	7,038,500	Electrical equipment (industrial & household)	2	11	23.25	3,070,656
ROHM & HAAS CO.....	90	201,000	Chemicals	6	43	2.95	6,821,613	Industrial chem.; plastic & other synthetic materials	4	22	4.68	4,295,342
RUBBERMAID INC.....	428	27,772	Basic industries & materials	64	66	0.33	8,355,329	Rubber & misc. plastic prod. (tires, plastic footwear, etc.)	5	5	5.01	554,720
S3 INCORPORATED.....	169	95,792	Information & electronics	81	217	0.21	45,823,950	Computer networking communications equip.	8	15	4.70	2,620,503
SABRE GROUP HLDGS INC -CL A.....	480	24,000	Information & electronics	206	217	0.05	45,823,950	Computer integrated systems design	6	6	5.57	431,256
SANTA CRUZ OPERATION INC.....	297	46,130	Information & electronics	125	217	0.10	45,823,950	Prepackaged software	29	58	0.70	6,619,062
SCHERER (R P)/DE.....	453	25,386	Medical substances & devices	73	83	0.13	19,849,094	Drugs: pharmaceutical preparations	34	38	0.16	15,733,395
SCHERING-PLOUGH.....	29	847,000	Medical substances & devices	9	83	4.27	19,849,094	Drugs: pharmaceutical preparations	9	38	5.38	15,733,395
SCHLUMBERGER LTD.....	47	486,205	Basic industries & materials	4	66	5.82	8,355,329	Oil & gas extraction; petrol. refining & related ind.	2	13	19.65	2,474,105
SCI SYSTEMS INC.....	351	36,569	Information & electronics	150	217	0.08	45,823,950	Electronic components (semiconductors, coils, etc.)	22	35	0.55	6,648,235
SCIENCE APPLTNS INTL.....	498	23,202	Engineering, accounting, & research/testing services	3	3	16.78	138,309	Engineering, accounting, & research/testing services	3	3	16.78	138,309
SCIENTIFIC-ATLANTA INC.....	149	114,344	Information & electronics	72	217	0.25	45,823,950	Radio, TV, cell phone, & satellite communication eq.	5	10	3.15	3,625,457
SCIOS INC.....	334	39,807	General services	3	5	19.17	207,689	Wholesale & retail trade	2	2	45.70	87,107
SEAGATE TECHNOLOGY.....	52	462,206	Information & electronics	21	217	1.01	45,823,950	Computer storage devices	2	9	17.73	2,607,477
SECURITY DYNAMICS TECH INC.....	445	26,280	Information & electronics	192	217	0.06	45,823,950	Computer peripheral equip. (printers, scanners, etc.)	5	7	8.08	325,349
SEPRACOR INC.....	312	43,055	Information & electronics	131	217	0.09	45,823,950	Laboratory controlling & measuring instruments	16	23	1.78	2,423,390

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SEQUENT COMPUTER SYSTEMS INC.....	174	92,984	Information & electronics	84	217	0.20	45,823,950	Electronic computers & computer terminals	10	12	0.80	11,093,953
SEQUIUS PHARMACEUTICALS INC.....	371	32,474	Medical substances & devices	54	83	0.16	19,849,094	Drugs: pharmaceutical preparations	25	38	0.21	15,733,395
SHARED MEDICAL SYSTEMS CORP.....	223	64,046	Information & electronics	106	217	0.14	45,823,950	Computer integrated systems design	4	6	14.85	431,256
SHELL OIL CO.....	91	199,000	Basic industries & materials	11	66	2.38	8,355,329	Oil & gas extraction; petrol. refining & related ind.	4	13	8.04	2,474,105
SHERWIN-WILLIAMS CO.....	466	24,748	Chemicals	42	43	0.36	6,821,613	Other chem. (soaps, ink, paints, fertilizers, explosives, etc.)	21	21	0.98	2,526,271
SHIVA CORP.....	451	25,545	Information & electronics	198	217	0.06	45,823,950	Computer networking communications equip.	15	15	1.25	2,620,503
SILICON GRAPHICS INC.....	50	479,101	Information & electronics	19	217	1.05	45,823,950	Electronic computers & computer terminals	6	12	4.10	11,093,953
SILICON VALLEY GROUP INC.....	200	73,901	Machinery & electrical equipment	18	51	1.05	7,038,500	Machinery (indus., farm, services, mining & construction)	13	40	1.86	3,967,844
SMARTALK TELESERVICES INC.....	338	39,186	Information & electronics	142	217	0.09	45,823,950	Communications serv. (phone, satellite, radio/TV, cable, etc.)	4	5	3.72	1,053,727
SMITH INTERNATIONAL INC.....	357	34,900	Chemicals	30	43	0.51	6,821,613	Other chem. (soaps, ink, paints, fertilizers, explosives, etc.)	15	21	1.38	2,526,271
SNAP-ON INC.....	293	46,500	Information & electronics	123	217	0.10	45,823,950	Laboratory controlling & measuring instruments	13	23	1.92	2,423,390
SOLUTIA INC.....	230	60,000	Chemicals	17	43	0.88	6,821,613	Industrial chem.; plastic & other synthetic materials	13	22	1.40	4,295,342
SPACELABS MED INC.....	219	65,581	Medical substances & devices	31	83	0.33	19,849,094	Medical instruments	9	20	3.25	2,018,146
SPX CORP.....	479	24,100	Machinery & electrical equipment	49	51	0.34	7,038,500	Machinery (indus., farm, services, mining & construction)	39	40	0.61	3,967,844
ST JUDE MEDICAL INC.....	160	104,693	Medical substances & devices	24	83	0.53	19,849,094	Medical instruments	6	20	5.19	2,018,146

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STANDARD PRODUCTS CO.....	301	45,991	Motor vehicles & other surface transportation equipment	16	22	0.25	18,380,209	Motor vehicles & motor vehicle equipment	13	16	0.25	18,093,401
STEELCASE INC.....	208	70,000	Basic industries & materials	31	66	0.84	8,355,329	Lumber, wood products, & furniture	3	6	12.89	543,085
STERIS CORP.....	484	23,914	Medical substances & devices	80	83	0.12	19,849,094	Medical instruments	20	20	1.18	2,018,146
STERLING COMMERCE INC.....	464	24,853	Information & electronics	201	217	0.05	45,823,950	Prepackaged software	55	58	0.38	6,619,062
STERLING SOFTWARE INC.....	499	23,114	Information & electronics	217	217	0.05	45,823,950	Prepackaged software	58	58	0.35	6,619,062
STORAGE TECHNOLOGY CP -CL A.....	86	209,526	Information & electronics	38	217	0.46	45,823,950	Computer storage devices	5	9	8.04	2,607,477
STRATUS COMPUTER INC.....	178	90,647	Information & electronics	87	217	0.20	45,823,950	Electronic computers & computer terminals	11	12	0.78	11,093,953
STRUCTURAL DYNAMICS RESEARCH.....	281	49,407	Information & electronics	120	217	0.11	45,823,950	Prepackaged software	27	58	0.75	6,619,062
STRYKER CORP.....	243	56,895	Medical substances & devices	35	83	0.29	19,849,094	Medical instruments	12	20	2.82	2,018,146
SUGEN INC.....	360	34,585	Medical substances & devices	52	83	0.17	19,849,094	Drugs: biological products, except diagnostic substances	10	19	2.30	1,504,594
SUN MICROSYSTEMS INC.....	31	825,968	Information & electronics	12	217	1.80	45,823,950	Electronic computers & computer terminals	3	12	7.07	11,093,953
SUNSTRAND CORP.....	201	73,000	Aircraft, guided missiles & space vehicles	7	8	1.56	4,672,800	Aircraft, guided missiles & space vehicles	7	8	1.56	4,672,800
SUNGARD DATA SYSTEMS INC.....	184	87,849	Information & electronics	89	217	0.19	45,823,950	Multiple & miscellaneous computer & data processing services	2	5	16.26	540,442
SYBASE INC.....	129	138,590	Information & electronics	58	217	0.30	45,823,950	Prepackaged software	10	58	2.09	6,619,062
SYMANTEC CORP.....	176	91,332	Information & electronics	85	217	0.20	45,823,950	Prepackaged software	17	58	1.38	6,619,062
SYMBOL TECHNOLOGIES.....	396	29,991	Information & electronics	170	217	0.07	45,823,950	Computer peripheral equip. (printers, scanners, etc.)	3	7	9.22	325,349
SYNOPSIS INC.....	147	116,059	Information & electronics	71	217	0.25	45,823,950	Prepackaged software	14	58	1.75	6,619,062
SYSTEM SOFTWARE ASSOC INC.....	272	51,700	Information & electronics	117	217	0.11	45,823,950	Prepackaged software	26	58	0.78	6,619,062

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TECUMSEH PRODUCTS CO -CL A.....	369	32,600		Machinery & electrical equipment	40	51	0.46	7,038,500	31	40	0.82	3,967,844
TELLABS INC.....	114	158,129		Information & electronics	51	217	0.35	45,823,950		14	3.94	4,010,990
TELXON CORP.....	347	37,500		Information & electronics	148	217	0.08	45,823,950		4	17.82	210,468
TENNECO INC.....	265	53,000		Motor vehicles & other surface transportation equipment	14	22	0.29	18,380,209	11	16	0.29	18,093,401
TERADYNE INC.....	113	162,500		Information & electronics	50	217	0.35	45,823,950		4	6.71	2,423,390
TEXACO INC.....	121	147,000		Basic industries & materials	18	66	1.76	8,355,329		8	5.94	2,474,105
TEXAS INSTRUMENTS INC.....	24	1,075,000		Information & electronics	8	217	2.35	45,823,950		2	16.17	6,648,235
TEXTRON INC.....	81	222,000		Aircraft, guided missiles & space vehicles	5	8	4.75	4,672,800		5	4.75	4,672,800
THERMEDICS INC.....	473	24,270		Machinery & electrical equipment	47	51	0.34	7,038,500	37	40	0.61	3,967,844
THERMO ELECTRON CORP.....	97	191,629		Information & electronics	43	217	0.42	45,823,950		3	7.91	2,423,390
THERMO INSTRUMENT SYSTEMS.....	158	107,613		Information & electronics	76	217	0.23	45,823,950		9	4.44	2,423,390
THERMO OPTEK CORP.....	422	28,061		Information & electronics	184	217	0.06	45,823,950		20	1.16	2,423,390
THERMOQUEST CORP.....	420	28,152		Information & electronics	182	217	0.06	45,823,950		19	1.16	2,423,390
THERMOTREX CORP.....	374	32,067		Medical substances & devices	57	83	0.16	19,849,094		14	1.59	2,018,146

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THOMAS & BETTS CORP.....	270	51,896	116	217	0.11	45,823,950	18	35	0.78	6,648,235
TIMKEN CO.....	315	43,000	33	51	0.61	7,038,500	24	40	1.08	3,967,844
TORO CO.....	350	36,574	36	51	0.52	7,038,500	27	40	0.92	3,967,844
TREX MEDICAL CORP.....	468	24,705	77	83	0.12	19,849,094	19	20	1.22	2,018,146
TRIMBLE NAVIGATION LTD.....	330	40,662	137	217	0.09	45,823,950	17	23	1.68	2,423,390
TRW INC.....	39	650,000	4	22	3.54	18,380,209	4	16	3.59	18,093,401
TYCO INTERNATIONAL LTD.....	306	45,000	32	51	0.64	7,038,500	23	40	1.13	3,967,844
U S SURGICAL CORP.....	203	71,800	29	83	0.36	19,849,094	8	20	3.56	2,018,146
ULTRATECH STEPPER INC.....	393	30,050	167	217	0.07	45,823,950	7	7	1.15	2,616,313
UNION CAMP CORP.....	239	57,300	39	66	0.69	8,355,329	5	7	3.78	1,515,944
UNION CARBIDE CORP.....	115	157,000	10	43	2.30	6,821,613	6	22	3.66	4,295,342
UNISYS CORP.....	66	302,300	29	217	0.66	45,823,950	8	12	2.59	11,093,953
UNITED STATES POSTAL SERVICE.....	212	68,000	1	5	32.74	207,689	1	1	100.00	68,000
UNITED TECHNOLOGIES CORP.....	21	1,187,000	2	8	25.40	4,672,800	2	8	25.40	4,672,800
UNIVERSAL FOODS CORP.....	378	31,510	31	43	0.46	6,821,613	16	22	0.73	4,295,342

See SOURCE at end of table

Table 2. Alphabetical list of top 500 corporations in R&D spending: 1997

Corporation (alphabetical order)	Rank among top 500 in R&D	R&D [In thousands of dollars]	Status in major sector				Status in detailed sector				
			Major sector	Rank among top 500 firms in the same major sector	Number of top 500 firms in the same major sector	Percent of R&D among top 500 in the same major sector	Major sector R&D total [In thousands of dollars]	Detailed sector	Rank among top 500 firms in the same detailed sector	Number of top 500 firms in the same detailed sector	Percent of R&D among top 500 in the same detailed sector
UNOVA INC.....	263	53,100	Machinery & electrical equipment	24	51	0.75	Machinery (Indus., farm, services, mining & construction)	18	40	1.34	3,967,844
USCS INTL INC.....	394	30,034	Information & electronics	168	217	0.07	Prepackaged software	41	58	0.45	6,619,062
VALSPAR CORP.....	339	39,099	Chemicals	27	43	0.57	Other chem. (soaps, ink, paints, fertilizers, explosives, etc.)	12	21	1.55	2,526,271
VARIAN ASSOCIATES INC.....	153	110,750	Information & electronics	74	217	0.24	Laboratory controlling & measuring instruments	8	23	4.57	2,423,390
VERITAS SOFTWARE CO.....	456	25,219	Information & electronics	199	217	0.06	Prepackaged software	54	58	0.38	6,619,062
VERTEX PHARMACEUTICALS INC.....	273	51,624	Medical substances & devices	41	83	0.26	Drugs: pharmaceutical preparations	19	38	0.33	15,733,395
VIMRX PHARMACEUTICALS INC.....	253	54,369	Medical substances & devices	37	83	0.27	Drugs: pharmaceutical preparations	16	38	0.35	15,733,395
VLSI TECHNOLOGY INC.....	165	98,434	Information & electronics	78	217	0.21	Electronic components (semiconductors, coils, etc.)	10	35	1.48	6,648,235
VTEL CORP.....	470	24,460	Information & electronics	203	217	0.05	Radio, TV, cell phone, & satellite communication eq.	9	10	0.67	3,625,457
WARNER-LAMBERT CO.....	38	672,200	Medical substances & devices	10	83	3.39	Drugs: pharmaceutical preparations	10	38	4.27	15,733,395
WATERS CORP.....	191	80,750	Information & electronics	92	217	0.18	Laboratory controlling & measuring instruments	10	23	3.33	2,423,390
WATKINS-JOHNSON.....	251	54,682	Machinery & electrical equipment	21	51	0.78	Machinery (Indus., farm, services, mining & construction)	15	40	1.38	3,967,844
WESTERN ATLAS INC.....	233	59,200	Basic industries & materials	38	66	0.71	Oil & gas extraction; petrol. refining & related ind.	11	13	2.39	2,474,105
WESTERN DIGITAL CORP.....	120	150,157	Information & electronics	53	217	0.33	Computer storage devices	6	9	5.76	2,607,477
WESTINGHOUSE AIR BRAKE CO.....	471	24,386	Motor vehicles & other surface transportation equipment	22	22	0.13	Ships, trains, motorcycles, bicycles, campers, military tanks, etc.	6	6	8.50	286,808
WESTVACO CORP.....	317	42,944	Basic industries & materials	53	66	0.51	Paper & allied products	6	7	2.83	1,515,944
WEYERHAEUSER CO.....	246	56,000	Basic industries & materials	42	66	0.67	Lumber, wood products, & furniture	4	6	10.31	543,085

See SOURCE at end of table

Table 2. Alphabetical list of top 500 corporations in R&D spending: 1997

Corporation (alphabetical order)	Rank among top 500 in R&D	R&D [In thousands of dollars]	Status in major sector				Status in detailed sector					
			Major sector	Rank among top 500 firms in the same major sector	Number of top 500 firms in the same major sector	Percent of R&D among top 500 in the same major sector	Major sector R&D total [In thousands of dollars]	Detailed sector	Rank among top 500 firms in the same detailed sector	Number of top 500 firms in the same detailed sector	Percent of R&D among top 500 in the same detailed sector	Detailed sector R&D total [In thousands of dollars]
WHIRLPOOL CORP.....	100	181,000	Machinery & electrical equipment	10	51	2.57	7,038,500	Electrical equipment (industrial & household)	4	11	5.89	3,070,656
WITCO CORP.....	204	71,756	Chemicals	16	43	1.05	6,821,613	Industrial chem.: plastic & other synthetic materials	12	22	1.67	4,295,342
XEROX CORP.....	23	1,079,000	Information & electronics	7	217	2.35	45,823,950	Ophthalmic goods, photograph. equip. & clocks	1	7	41.24	2,616,313
XILINX INC.....	192	80,456	Information & electronics	93	217	0.18	45,823,950	Electronic components (semiconductors, colls. etc.)	13	35	1.21	6,648,235
XOMA CORP.....	398	29,878	Medical substances & devices	61	83	0.15	19,849,094	Drugs: biological products, except diagnostic substances	13	19	1.99	1,504,594
XYLAN CORP.....	449	25,875	Information & electronics	196	217	0.06	45,823,950	Computer networking communications equip.	14	15	1.27	2,620,503
YORK INTL.....	385	30,600	Machinery & electrical equipment	41	51	0.43	7,038,500	Machinery (indus., farm, services, mining & construction)	32	40	0.77	3,967,844
ZENITH ELECTRONICS CORP.....	318	42,900	Information & electronics	133	217	0.09	45,823,950	Household audio & video equipment, & audio recordings	3	3	18.67	229,751

SOURCE: Standard and Poor's Compustat, Englewood, CO.

Table 3. Top 500 firms for R&D in 1997, by industrial sector

Major & detailed industrial sector/ corporation	Validated or adjusted R&D [In thousands of dollars]		Employees		Sales [In thousands of dollars]	
	1997	1996 ¹	1997	1996 ¹	1997	1996 ¹
	Aircraft, guided missiles & space vehicles	4,672,800	3,822,500	762,298	672,910	130,291,000
ALLIEDSIGNAL INC.....	349,000	345,000	70,500	76,600	14,472,000	13,971,000
BOEING CO.....	1,924,000	1,200,000	238,000	143,000	45,800,000	22,681,000
GENCORP INC.....	28,000	31,000	9,460	8,950	1,568,000	1,515,000
GOODRICH (B F) CO.....	101,800	100,500	16,838	14,160	3,373,000	2,238,800
LOCKHEED MARTIN CORP.....	788,000	784,000	173,000	190,000	28,069,000	26,875,000
SUNDSTRAND CORP.....	73,000	55,000	10,400	9,400	1,752,000	1,521,000
TEXTRON INC.....	222,000	185,000	64,000	57,000	10,544,000	9,274,000
UNITED TECHNOLOGIES CORP.....	1,187,000	1,122,000	180,100	173,800	24,713,000	23,434,000
Basic industries & materials	8,355,329	7,789,266	2,056,390	2,020,161	728,194,509	731,889,373
Agr. services; forestry; fishing; mining; construction.....	203,300	183,600	7,031	6,620	2,235,400	2,108,500
DEKALB GENETICS CORP -CL B.....	57,300	47,600	2,037	1,882	451,400	387,500
PIONEER HI-BRED INTERNATIONL.....	146,000	136,000	4,994	4,738	1,784,000	1,721,000
Fabricated metal products, except machinery & transp. eq.....	508,038	476,244	172,812	176,762	31,236,739	31,237,141
AEROQUIP-VICKERS INC.....	72,161	74,892	14,780	15,162	2,112,293	2,032,915
CROWN CORK & SEAL CO INC.....	53,100	51,500	40,985	44,611	8,494,600	8,331,900
DANAHER CORP.....	57,008	46,964	13,200	11,600	2,050,968	1,811,878
FORTUNE BRANDS INC.....	46,600	40,200	24,920	28,000	4,425,797	5,776,300
GILLETTE CO.....	212,000	204,000	44,000	44,100	10,062,000	9,697,700
PARKER-HANNIFIN CORP.....	67,169	58,688	34,927	33,289	4,091,081	3,586,448
Food & kindred products; tobacco products.....	1,187,900	1,090,600	441,424	457,534	118,903,836	120,006,208
BEST FOODS.....	66,000	73,000	44,200	55,300	8,400,000	9,844,000
CAMPBELL SOUP CO.....	77,000	84,000	37,000	40,650	7,964,000	7,678,000
HERSHEY FOODS CORP.....	27,500	26,100	16,200	15,300	4,302,236	3,989,308
KELLOGG CO.....	106,100	84,300	14,339	14,511	6,830,100	6,676,600
NABISCO HLDGS CORP -CL A.....	95,000	NA	53,000	54,000	8,734,000	8,889,000
PHILIP MORRIS COS INC.....	533,000	515,000	152,000	154,000	56,114,000	54,553,000
QUAKER OATS CO.....	34,900	33,000	14,123	14,800	5,015,700	5,199,000
RALSTON PURINA CO.....	70,400	84,200	30,162	29,273	4,486,800	6,114,300
RJR NABISCO HLDGS CORP.....	178,000	191,000	80,400	79,700	17,057,000	17,063,000
Lumber, wood products, & furniture.....	543,085	433,083	185,603	162,303	34,722,299	31,877,279
BE AEROSPACE INC.....	45,685	37,083	NA	3,140	487,999	412,379
HILLENBRAND INDUSTRIES.....	49,000	42,000	10,100	9,800	1,776,000	1,684,000
JOHNSON CONTROLS INC.....	232,000	165,000	72,300	65,800	11,145,400	10,009,400
LEAR CORP.....	90,400	70,000	51,025	43,902	7,342,900	6,249,100
STEELCASE INC.....	70,000	65,000	16,400	NA	2,760,000	2,408,400
WEYERHAEUSER CO.....	56,000	54,000	35,778	39,661	11,210,000	11,114,000
Misc. products (leather, toys, jewelry, musical inst.).....	372,432	320,583	42,262	43,952	9,610,072	8,200,292
CALLAWAY GOLF CO.....	30,298	16,154	2,662	2,152	842,927	678,512
HASBRO INC.....	154,710	152,487	12,000	13,000	3,188,559	3,002,370

See explanatory information and source at end of table

Table 3. Top 500 firms for R&D in 1997, by industrial sector

Major & detailed industrial sector/ corporation	Validated or adjusted R&D [In thousands of dollars]		Employees		Sales [In thousands of dollars]	
	1997	1996 ¹	1997	1996 ¹	1997	1996 ¹
	Misc. products (leather, toys, jewelry, musical inst.)—continued					
INTL GAME TECHNOLOGY.....	31,074	25,701	2,600	2,800	743,970	733,452
MATTEL INC.....	156,350	126,241	25,000	26,000	4,834,616	3,785,958
Printing, publishing, and allied industries.....	159,472	98,413	21,447	19,388	3,958,203	3,582,035
DOW JONES & CO INC.....	116,420	73,974	12,309	11,844	2,572,518	2,481,592
REYNOLDS & REYNOLDS -CL A.....	43,052	24,439	9,138	7,544	1,385,685	1,100,443
Stone, clay, glass, & concrete products.....	412,266	360,791	90,200	80,900	15,479,542	13,354,200
CORNING INC.....	250,700	191,300	20,500	20,000	4,129,100	3,684,500
DONNELLY CORP.....	32,492	27,728	5,000	3,100	671,297	439,571
JOHNS MANVILLE INTL GRP INC.....	31,174	32,663	8,300	8,100	1,647,645	1,552,429
OWENS CORNING.....	69,000	78,000	24,000	18,900	4,373,000	3,832,000
OWENS-ILLINOIS INC.....	28,900	31,100	32,400	30,800	4,658,500	3,845,700
Textile & apparel products.....	77,091	73,449	10,681	10,454	1,857,134	1,792,945
ALBANY INTL CORP -CL A.....	23,070	21,945	5,881	5,854	710,079	692,760
DEXTER CORP.....	54,021	51,504	4,800	4,600	1,147,055	1,100,185
Oil & gas extraction; petrol. refining & related ind.....	2,474,105	2,367,808	509,180	494,235	394,692,040	402,872,740
AMOCO CORP.....	151,000	171,000	43,451	41,723	31,910,000	32,150,000
ASHLAND INC.....	29,000	27,000	37,200	36,100	13,327,000	12,227,000
ATLANTIC RICHFIELD CO.....	120,000	106,000	24,000	22,800	18,684,000	18,592,000
CHEVRON CORP.....	179,000	182,000	39,362	40,820	35,009,000	37,580,000
DRESSER INDUSTRIES INC.....	120,000	110,600	31,300	33,172	7,419,100	6,533,200
EXXON CORP.....	529,000	520,000	80,000	79,000	120,279,000	116,728,000
HALLIBURTON CO.....	164,700	133,300	70,750	60,000	8,694,200	7,279,600
MOBIL CORP.....	234,000	206,000	42,700	43,000	58,399,000	71,129,000
PHILLIPS PETROLEUM CO.....	56,000	59,000	17,100	17,200	15,210,000	15,731,000
SCHLUMBERGER LTD.....	486,205	452,608	63,500	57,000	10,647,590	8,956,150
SHELL OIL CO.....	199,000	173,000	19,904	20,463	28,268,000	28,823,000
TEXACO INC.....	147,000	139,000	29,313	28,957	45,187,000	44,561,000
WESTERN ATLAS INC.....	59,200	88,300	10,600	14,000	1,658,150	2,582,790
Paper & allied products.....	1,515,944	1,462,562	292,113	287,587	65,776,346	63,499,747
AVERY DENNISON CORP.....	61,100	54,600	16,200	15,800	3,345,700	3,222,500
FORT JAMES CORP.....	40,900	46,400	29,000	23,000	7,259,000	5,690,500
INTL PAPER CO.....	99,900	112,500	82,000	87,000	20,096,000	20,143,000
KIMBERLY-CLARK CORP.....	211,800	207,900	57,000	54,800	12,546,600	13,149,100
MINNESOTA MINING & MFG CO.....	1,002,000	947,000	75,639	74,289	15,070,000	14,236,000
UNION CAMP CORP.....	57,300	55,900	18,904	19,268	4,476,758	4,013,197
WESTVACO CORP.....	42,944	38,262	13,370	13,430	2,982,288	3,045,450
Ferrous metal products.....	60,300	66,200	22,000	24,000	3,745,100	8,494,600
ALLEGHENY TELEDYNE INC.....	60,300	66,200	22,000	24,000	3,745,100	3,815,600

See explanatory information and source at end of table

Table 3. Top 500 firms for R&D in 1997, by industrial sector

Major & detailed industrial sector/ corporation	Validated or adjusted R&D [In thousands of dollars]		Employees		Sales [In thousands of dollars]	
	1997	1996 ¹	1997	1996 ¹	1997	1996 ¹
	Nonferrous metal products.....	286,676	304,003	117,002	116,722	24,699,228
ALUMINUM CO OF AMERICA.....	143,200	165,500	81,600	76,800	13,319,200	13,061,000
ANDREW CORP.....	41,076	33,003	4,227	4,622	869,475	793,575
ENGELHARD CORP.....	61,400	56,500	5,675	6,300	3,629,553	3,177,231
REYNOLDS METALS CO.....	41,000	49,000	25,500	29,000	6,881,000	6,972,000
Rubber & misc. plastic prod. (tires, plastic footwear, etc.).....	554,720	551,930	144,635	139,704	21,278,570	20,859,880
ARMSTRONG WORLD INDS INC.....	47,800	59,300	10,643	10,580	2,198,700	2,156,400
COLTEC INDUSTRIES.....	46,548	44,125	9,072	8,153	1,314,869	1,159,691
GOODYEAR TIRE & RUBBER CO.....	384,100	374,500	95,302	91,310	13,155,100	13,112,800
MARK IV INDUSTRIES INC.....	48,500	44,500	17,000	15,800	2,210,200	2,076,000
RUBBERMAID INC.....	27,772	29,505	12,618	13,861	2,399,701	2,354,989
Chemicals.....	6,821,613	6,504,591	677,803	683,049	209,664,483	212,341,428
Industrial chem.; plastic & other synthetic materials.....	4,295,342	3,984,410	312,391	310,469	117,681,699	119,179,745
AIR PRODUCTS & CHEMICALS INC.....	113,700	114,000	16,400	15,200	4,637,800	4,008,000
ALBEMARLE CORP.....	31,446	30,442	2,700	2,800	829,850	854,481
ARCO CHEMICAL CO.....	82,000	81,000	4,200	4,000	3,995,000	3,955,000
BORDEN INC.....	24,900	41,100	8,000	11,500	1,487,700	3,681,300
BUSH BOAKE ALLEN INC.....	23,640	22,481	1,964	2,103	490,585	449,365
CROMPTON & KNOWLES CORP.....	53,611	52,359	5,519	5,665	1,851,180	1,803,969
DOW CHEMICAL.....	785,000	761,000	42,861	40,289	20,065,000	20,079,000
DU PONT (E I) DE NEMOURS.....	1,142,200	1,032,000	98,000	97,000	39,911,000	38,504,000
EASTMAN CHEMICAL CO.....	191,000	184,000	16,076	17,505	4,678,000	4,782,000
ETHYL CORP.....	42,168	47,371	1,500	1,800	1,063,615	1,149,651
FERRO CORP.....	26,600	23,800	6,851	6,912	1,381,280	1,355,685
INTL FLAVORS & FRAGRANCES.....	94,411	93,545	4,639	4,629	1,426,791	1,436,053
LUBRIZOL CORP.....	88,400	93,400	4,291	4,358	1,673,782	1,597,562
MILLENNIUM CHEMICALS INC.....	28,000	39,000	NA	NA	3,048,000	3,040,000
MONSANTO CO.....	939,000	728,000	21,900	28,000	7,514,000	9,262,000
OLIN CORP.....	29,000	39,000	9,800	9,300	2,410,000	2,638,000
PRAXAIR INC.....	79,000	72,000	25,388	25,271	4,735,000	4,449,000
ROHM & HAAS CO.....	201,000	187,000	11,592	11,633	3,999,000	3,982,000
SOLUTIA INC.....	60,000	81,000	8,800	NA	2,969,000	2,977,000
UNION CARBIDE CORP.....	157,000	159,000	11,813	11,745	6,502,000	6,106,000
UNIVERSAL FOODS CORP.....	31,510	29,824	4,127	4,035	825,714	806,352
WITCO CORP.....	71,756	73,088	5,970	6,724	2,187,402	2,263,327
Other chem. (soaps, ink, paints, fertilizers, explosives, etc.).....	2,526,271	2,520,181	365,412	372,580	91,982,784	93,161,683
AVON PRODUCTS.....	29,900	30,200	34,995	33,700	5,079,400	4,814,200
BETZDEARBORN INC.....	38,800	35,700	6,405	6,185	1,294,800	1,037,000
CARTER-WALLACE INC.....	28,785	27,284	3,360	3,460	665,056	651,955

See explanatory information and source at end of table

Table 3. Top 500 firms for R&D in 1997, by industrial sector

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Major & detailed industrial sector/ corporation	Validated or adjusted R&D [In thousands of dollars]		Employees		Sales [In thousands of dollars]	
	1997	1996 ¹	1997	1996 ¹	1997	1996 ¹
	Other chem. (soaps, ink, paints, fertilizers, explosives, etc.)—continued					
CLOROX CO/DE.....	50,489	45,821	5,500	5,300	2,541,042	2,225,465
COLGATE-PALMOLIVE CO.....	169,400	162,700	37,800	37,900	9,056,700	8,749,000
CYTEC INDUSTRIES INC.....	44,700	40,200	5,200	4,700	1,290,600	1,259,600
ECOLAB INC.....	30,420	28,676	10,210	9,573	1,640,352	1,490,009
FMC CORP.....	174,000	189,400	16,805	22,048	4,259,000	4,969,398
FULLER (H B) CO.....	24,830	25,823	6,000	5,900	1,306,789	1,275,716
GRACE (W R) & CO.....	42,400	93,900	6,300	17,400	1,479,700	3,454,100
GREAT LAKES CHEMICAL CORP.....	42,000	64,000	5,100	7,000	1,311,227	2,211,704
HERCULES INC.....	53,000	56,000	6,221	7,114	1,866,000	2,060,000
LAUDER ESTEE COS INC -CL A.....	35,300	32,900	14,700	13,500	3,381,600	3,194,500
MORTON INTERNATIONAL INC.....	58,800	80,200	10,500	14,100	2,381,400	3,647,100
NALCO CHEMICAL CO.....	43,000	41,900	6,905	6,502	1,433,700	1,303,500
PPG INDUSTRIES INC.....	250,000	239,100	31,900	31,300	7,379,000	7,218,100
PROCTOR & GAMBLE CO.....	1,282,000	1,221,000	106,000	103,000	35,764,000	35,284,000
REVLON CONSUMER PRODUCTS CP.....	29,700	26,300	16,000	14,300	2,390,900	2,167,000
SHERWIN-WILLIAMS CO.....	24,748	18,661	24,964	20,768	4,881,103	4,132,879
SMITH INTERNATIONAL INC.....	34,900	27,800	7,342	5,975	1,563,144	1,156,658
VALSPAR CORP.....	39,099	32,616	3,205	2,855	1,017,271	859,799
Engineering, accounting, & research/testing services.....	138,309	136,486	52,300	48,400	5,624,956	5,323,623
CERIDIAN CORP.....	70,200	82,500	8,000	10,800	1,074,800	1,495,600
EG&G INC.....	44,907	42,841	14,000	15,000	1,460,805	1,427,252
SCIENCE APPLCTNS INTL.....	23,202	11,145	30,300	22,600	3,089,351	2,400,771
Finance, insurance, real estate.....	81,048	21,609	3,505	338	1,362,427	88,771
INTERDIGITAL COMMUN CORP.....	24,248	21,609	205	278	49,836	53,693
LORAL SPACE & COMMUNICATIONS.....	56,800	NA	3,300	60	1,312,591	35,078
General services.....	207,689	167,110	905,843	897,854	60,376,709	58,344,109
Other (noncomputer) bus. serv (advertising, equip. rental, etc.).....	52,582	32,386	1,620	1,048	76,449	30,154
CELLNET DATA SYSTEMS INC.....	27,524	25,394	708	543	5,842	1,669
CMG INFORMATION SERVICES INC.....	25,058	6,992	912	505	70,607	28,485
Transportation; freight & warehousing; & pipeline services.....	68,000	55,500	892,873	885,871	58,216,000	56,402,000
UNITED STATES POSTAL SERVICE.....	68,000	55,500	892,873	885,871	58,216,000	56,402,000
Wholesale and retail trade.....	87,107	79,224	11,350	10,935	2,084,260	1,911,955
CRANE CO.....	47,300	41,700	11,000	10,600	2,036,831	1,847,732
SCIOS INC.....	39,807	37,524	350	335	47,429	64,223

See explanatory information and source at end of table

Table 3. Top 500 firms for R&D in 1997, by industrial sector

Major & detailed industrial sector/ corporation	Validated or adjusted R&D [In thousands of dollars]		Employees		Sales [In thousands of dollars]	
	1997	1996 ¹	1997	1996 ¹	1997	1996 ¹
	Information & electronics	45,823,950	38,680,710	2,797,403	2,589,914	656,846,593
Calculating/accounting mach. & office machines, nec.....	210,468	206,063	43,869	42,315	6,650,241	6,257,579
BELL & HOWELL COMPANY.....	38,321	38,101	5,704	6,110	856,971	902,797
DIEBOLD INC.....	45,184	41,797	6,714	5,980	1,226,936	1,030,191
PITNEY BOWES INC.....	89,463	81,726	29,901	28,625	4,100,464	3,858,579
TELXON CORP.....	37,500	44,439	1,550	1,600	465,870	466,012
Communications serv. (phone, satellite, radio/TV, cable, etc.).....	1,053,727	1,019,733	244,448	234,107	74,768,322	73,631,346
AT&T CORP.....	829,000	822,000	127,800	130,400	51,319,000	52,184,000
GEOTEK COMMUNICATIONS.....	39,609	37,528	685	800	65,510	92,794
GTE CORP.....	122,000	122,000	114,000	102,000	23,260,000	21,339,000
OMNIPOINT CORP.....	23,932	38,205	1,423	856	51,950	531
SMARTALK TELESERVICES INC.....	39,186	NA	540	51	71,862	15,021
Computer integrated systems design.....	431,256	324,937	33,090	28,372	5,706,732	4,918,026
CERNER CORP.....	36,151	29,893	2,050	NA	245,057	189,107
HBO & CO.....	96,759	64,096	6,286	4,404	1,203,204	796,578
INTERGRAPH CORP.....	98,073	103,397	7,700	8,200	1,124,305	1,095,333
MENTOR GRAPHICS CORP.....	112,227	72,886	2,570	2,500	454,727	447,886
SABRE GROUP HLDGS INC -CL A.....	24,000	NA	8,500	7,848	1,783,547	1,621,987
SHARED MEDICAL SYSTEMS CORP.....	64,046	54,665	5,984	5,420	895,892	767,135
Computer networking communications equip.....	2,620,503	1,792,079	42,863	34,833	20,849,561	15,270,196
3COM CORP.....	581,613	335,266	12,920	7,109	5,420,367	3,147,106
ADAPTEC INC.....	172,522	128,530	3,276	2,794	1,007,293	933,868
ASCEND COMMUNICATIONS INC.....	155,986	40,291	1,644	721	1,167,352	549,297
AUSPEX SYSTEMS INC.....	31,803	17,843	619	515	202,486	162,640
BAY NETWORKS INC.....	269,800	213,534	NA	NA	2,093,060	2,056,634
CABLETRON SYSTEMS.....	181,777	161,674	6,887	6,607	1,377,330	1,406,552
CIRRUS LOGIC INC.....	179,552	230,786	NA	2,557	954,270	917,154
CISCO SYSTEMS INC.....	698,169	399,291	11,000	8,782	6,440,171	4,096,007
DIALOGIC CORP.....	51,530	40,666	994	905	261,310	213,604
ELECTRONICS FOR IMAGING INC.....	40,318	22,440	538	354	360,631	298,013
FORE SYSTEMS INC.....	66,779	55,217	1,592	1,361	458,369	395,347
NETWORK EQUIPMENT TECH INC.....	43,442	43,354	1,408	1,367	308,721	324,438
S3 INCORPORATED.....	95,792	63,382	654	636	436,359	439,243
SHIVA CORP.....	25,545	23,982	610	670	150,993	201,837
XYLAN CORP.....	25,875	15,823	721	455	210,849	128,456
Computer peripheral equip. (printers, scanners, etc.).....	325,349	277,216	14,294	15,363	4,774,453	4,677,863
CALCOMP TECHNOLOGY INC.....	23,314	20,713	885	1,025	200,158	235,916
C-CUBE MICROSYSTEMS INC.....	64,204	44,177	750	669	337,012	319,758
DIAMOND MULTIMEDIA SYS INC.....	24,886	18,824	864	841	443,281	598,050
LEXMARK INTL GRP INC -CL A.....	128,900	123,900	7,985	6,573	2,493,500	2,377,600

See explanatory information and source at end of table

Table 3. Top 500 firms for R&D in 1997, by industrial sector

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Major & detailed industrial sector/ corporation	Validated or adjusted R&D		Employees		Sales	
	[In thousands of dollars]				[In thousands of dollars]	
	1997	1996 ¹	1997	1996 ¹	1997	1996 ¹
Computer peripheral equip. (printers, scanners, etc.)—continued						
LOGITECH INTL S A -ADR.....	27,774	26,481	NA	2,995	390,227	413,716
SECURITY DYNAMICS TECH INC.....	26,280	12,216	610	360	135,930	76,148
SYMBOL TECHNOLOGIES.....	29,991	30,905	3,200	2,900	774,345	656,675
Computer storage devices.....	2,607,477	2,440,150	211,348	184,527	40,661,287	38,546,913
DATA GENERAL CORP.....	109,984	98,022	5,100	4,900	1,533,169	1,322,250
DIGITAL EQUIPMENT.....	1,014,044	1,062,253	54,900	59,100	13,046,832	14,562,775
EMC CORP/MA.....	220,884	161,088	6,400	4,800	2,937,860	2,273,652
EXABYTE CORP.....	40,909	38,391	1,229	1,493	335,684	362,891
IOMEGA CORP.....	78,026	42,101	4,816	2,926	1,739,972	1,212,769
QUANTUM CORP.....	321,741	291,332	6,219	6,380	5,805,235	5,319,457
SEAGATE TECHNOLOGY.....	462,206	420,429	111,000	87,000	8,940,022	8,588,350
STORAGE TECHNOLOGY CP -CL A.....	209,526	176,422	8,300	8,300	2,144,656	2,039,550
WESTERN DIGITAL CORP.....	150,157	150,112	13,384	9,628	4,177,857	2,865,219
Electronic components (semiconductors, coils, etc.).....	6,648,235	5,591,027	340,356	315,460	72,429,514	65,372,707
ACTEL CORP.....	26,465	23,934	380	356	155,858	148,779
ADVANCED MICRO DEVICES.....	467,877	400,703	12,800	12,200	2,356,375	1,953,019
ALTERA CORP.....	54,417	49,513	1,086	918	631,114	497,306
AMP INC.....	319,600	315,100	46,526	44,985	5,745,235	5,468,028
ANALOG DEVICES.....	196,148	177,772	7,500	6,900	1,243,494	1,193,786
APPLIED MAGNETICS CORP.....	52,532	50,867	8,431	6,401	494,839	344,754
ARTESYN TECHNOLOGIES INC.....	30,032	17,714	4,219	1,557	527,236	222,485
ATMEL CORP.....	122,896	110,239	4,589	3,914	958,282	1,070,288
BERG ELECTRONICS CORP.....	28,400	26,100	7,000	6,000	785,150	704,669
BURR-BROWN CORP.....	33,951	28,452	1,308	1,311	252,102	219,997
CHIPS & TECHNOLOGIES INC.....	23,665	19,837	260	209	168,334	150,788
CYPRESS SEMICONDUCTOR CORP.....	93,842	84,334	2,770	2,171	539,856	528,385
DALLAS SEMICONDUCTOR CORP.....	46,078	34,974	1,497	1,348	368,212	288,354
ESS TECHNOLOGY INC.....	29,471	20,269	447	253	249,517	226,455
INTEGRATED CIRCUIT SYSTEMS.....	24,717	12,073	177	206	103,759	100,485
INTEGRATED SILICON SOLUTION.....	26,179	21,350	476	380	108,261	132,039
INTEL CORP.....	2,347,000	1,808,000	63,700	48,500	25,070,000	20,847,000
INTL RECTIFIER CORP.....	35,495	26,967	4,385	3,915	486,127	576,849
KEMET CORP.....	23,766	20,755	11,300	10,718	667,721	555,319
LEVEL ONE COMMUNICATIONS INC.....	30,398	24,505	559	410	156,262	111,987
LINEAR TECHNOLOGY CORP.....	35,401	31,058	1,084	1,650	379,251	377,771
LSI LOGIC CORP.....	229,069	184,452	4,443	3,912	1,290,275	1,238,694
MAXIM INTEGRATED PRODUCTS.....	51,264	47,532	1,998	1,574	433,710	421,626
MEMC ELECTRONIC MATERIALS INC.....	64,457	44,313	7,700	7,100	986,673	1,119,500
MICROCHIP TECHNOLOGY INC.....	38,362	33,648	2,153	1,879	396,894	334,252
MICRON TECHNOLOGY INC.....	208,900	191,900	12,200	9,900	3,515,500	3,653,800
MOLEX INC.....	83,843	78,745	11,947	10,100	1,539,712	1,382,673
NATIONAL SEMICONDUCTOR CORP.....	482,000	372,100	13,000	12,400	2,536,700	2,507,300

See explanatory information and source at end of table

Table 3. Top 500 firms for R&D in 1997, by industrial sector

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Major & detailed industrial sector/ corporation	Validated or adjusted R&D [In thousands of dollars]		Employees		Sales [In thousands of dollars]	
	1997	1996 ¹	1997	1996 ¹	1997	1996 ¹
	Electronic components (semiconductors, coils, etc.)—continued					
OAK TECHNOLOGY INC.....	34,660	35,555	430	410	167,395	247,984
READ-RITE CORP.....	64,995	52,221	23,107	19,507	1,162,050	991,118
SCI SYSTEMS INC.....	36,569	33,556	18,470	15,524	5,762,656	4,544,759
TEXTAS INSTRUMENTS INC.....	1,075,000	989,000	44,140	59,927	9,750,000	9,940,000
THOMAS & BETTS CORP.....	51,896	47,229	16,400	14,700	2,114,718	1,987,545
VLSI TECHNOLOGY INC.....	98,434	105,185	2,483	2,948	712,653	716,770
XILINX INC.....	80,456	71,075	1,391	1,277	613,593	568,143
Electronic computers & computer terminals.....	11,093,953	9,732,300	558,862	500,254	192,432,594	174,669,885
APPLE COMPUTER INC.....	485,000	604,000	10,176	13,398	7,081,000	9,833,000
COMPAQ COMPUTER CORP.....	817,000	407,000	32,565	18,863	24,584,000	18,109,000
DELL COMPUTER CORP.....	145,000	88,000	16,000	10,350	12,327,000	7,759,000
ENCORE COMPUTER CORP.....	23,953	30,260	121	694	29,486	47,627
HEWLETT-PACKARD CO.....	3,078,000	2,718,000	121,900	112,000	42,895,000	38,420,000
INTL BUSINESS MACHINES CORP.....	4,307,000	3,934,000	269,465	240,615	78,508,000	75,947,000
NCR CORP.....	447,000	444,000	38,300	38,600	6,589,000	6,963,000
SEQUENT COMPUTER SYSTEMS INC.....	92,984	73,717	2,818	2,656	833,886	595,362
SILICON GRAPHICS INC.....	479,101	353,461	10,930	10,485	3,662,601	2,921,316
STRATUS COMPUTER INC.....	90,647	79,818	2,487	2,293	688,275	609,329
SUN MICROSYSTEMS INC.....	825,968	657,144	21,500	17,400	8,598,346	7,094,751
UNISYS CORP.....	302,300	342,900	32,600	32,900	6,636,000	6,370,500
Household audio & video equipment, & audio recordings.....	229,751	835,871	34,784	110,269	7,801,494	18,420,195
GENERAL MOTORS CL H.....	120,400	730,000	15,000	86,000	5,128,300	15,744,100
HARMAN INTERNATIONAL INDS.....	66,451	59,171	8,384	8,369	1,474,094	1,361,595
ZENITH ELECTRONICS CORP.....	42,900	46,700	11,400	15,900	1,199,100	1,314,500
Laboratory controlling & measuring instruments.....	2,423,390	1,942,204	257,279	218,788	37,567,392	33,460,925
ANALOGIC CORP.....	37,063	31,342	1,500	1,500	251,141	224,309
BECKMAN COULTER INC.....	123,600	108,400	11,171	6,079	1,198,000	1,028,000
BIO-RAD LABS -CL A.....	46,138	39,580	2,650	2,535	426,914	418,789
COHERENT INC.....	48,721	37,705	2,131	1,794	391,038	364,430
CREDENCE SYSTEMS CORP.....	43,372	35,422	646	575	204,092	238,788
EMERSON ELECTRIC CO.....	445,100	398,700	100,700	86,400	12,298,600	11,149,900
HONEYWELL INC.....	446,600	353,300	57,500	53,000	8,027,500	7,311,600
KLA-TENCOR CORP.....	134,105	52,800	3,600	2,500	1,031,824	694,867
LTX CORP.....	23,350	22,927	950	1,032	194,343	266,476
MILLIPORE CORP.....	56,299	38,429	4,754	3,482	758,919	618,735
PERKIN-ELMER CORP.....	132,461	102,331	5,685	5,697	1,276,766	1,162,949
QUICKTURN DESIGN SYSTEMS INC.....	23,499	18,548	382	333	110,404	104,370
ROBOTIC VISION SYSTEMS INC.....	23,410	14,679	800	509	152,103	111,022
SEPRACOR INC.....	43,055	35,828	149	128	15,337	15,041
SNAP-ON INC.....	46,500	42,400	11,700	10,600	1,744,106	1,549,548

See explanatory information and source at end of table

Table 3. Top 500 firms for R&D in 1997, by industrial sector

Major & detailed industrial sector/ corporation	Validated or adjusted R&D [In thousands of dollars]		Employees		Sales [In thousands of dollars]	
	1997	1996 ¹	1997	1996 ¹	1997	1996 ¹
	Laboratory controlling & measuring instruments—continued					
TERADYNE INC.....	162,500	143,931	6,300	5,000	1,266,274	1,171,615
THERMO ELECTRON CORP.....	191,629	154,448	22,400	17,760	3,558,320	2,932,558
THERMO INSTRUMENT SYSTEMS.....	107,613	80,591	9,398	6,870	1,592,314	1,209,362
THERMO OPTEK CORP.....	28,061	21,979	2,341	2,065	466,935	350,639
THERMOQUEST CORP.....	28,152	21,821	2,090	1,270	438,863	313,793
TRIMBLE NAVIGATION LTD.....	40,662	36,705	1,292	1,094	272,305	233,660
VARIAN ASSOCIATES INC.....	110,750	110,140	6,500	6,700	1,425,824	1,599,361
WATERS CORP.....	80,750	40,198	2,640	1,865	465,470	391,113
Modems & other wired telephone equipment.....	4,010,990	2,528,341	167,125	146,686	33,740,146	21,513,525
ADC TELECOMMUNICATIONS INC.....	122,638	90,038	5,924	4,620	1,164,450	828,009
ADTRAN INC.....	30,055	24,647	1,011	894	265,335	250,121
ADVANCED FIBRE COMM INC.....	25,726	14,413	660	425	267,858	130,193
ASPECT TELECOMMUNICATIONS.....	45,723	34,585	1,610	1,330	390,642	308,703
BROADBAND TECHNOLOGIES INC.....	28,062	22,785	300	333	15,012	23,144
CIENA CORP.....	23,308	8,922	841	225	373,827	54,838
COMVERSE TECHNOLOGY INC.....	38,659	27,441	2,827	1,243	280,281	197,181
DSC COMMUNICATIONS CORP.....	252,089	210,091	6,681	6,367	1,575,479	1,380,891
GENERAL DATACOMM INDS.....	40,876	34,121	1,727	1,849	207,766	235,129
LUCENT TECHNOLOGIES INC.....	3,100,620	1,838,000	134,000	124,000	26,360,000	15,859,000
PAIRGAIN TECHNOLOGIES INC.....	31,982	18,593	640	486	282,325	205,409
PICTURETEL CORP.....	79,523	60,089	1,544	1,496	466,425	482,532
RELTEC CORP.....	33,600	37,400	5,273	NA	887,200	689,400
TELLABS INC.....	158,129	107,216	4,087	3,418	1,203,546	868,975
Multiple and miscellaneous computer & data processing services.....	540,442	484,471	42,567	39,032	6,885,293	5,477,307
AMERICA ONLINE INC.....	58,208	70,798	7,371	5,828	1,685,228	1,093,854
AUTOMATIC DATA PROCESSING.....	296,544	249,635	30,000	29,000	4,112,186	3,566,597
BARRA INC.....	28,914	17,200	696	504	137,377	104,762
INCYTE PHARMACEUTICALS INC.....	68,927	40,864	NA	NA	88,351	41,785
SUNGARD DATA SYSTEMS INC.....	87,849	105,974	4,500	3,700	862,151	670,309
Ophthalmic goods, photogrp. eq. & clocks.....	2,616,313	2,546,710	223,806	216,101	39,586,587	40,448,717
AVID TECHNOLOGY INC.....	74,363	72,590	1,599	1,663	471,338	429,009
BAUSCH & LOMB INC.....	67,500	75,500	13,000	13,000	1,915,700	1,926,800
EASTMAN KODAK CO.....	1,047,700	1,028,000	97,500	94,800	14,538,000	15,968,000
IMATION CORP.....	194,900	183,100	9,800	9,400	2,201,800	2,278,200
POLAROID CORP.....	122,800	116,300	9,931	9,996	2,146,400	2,275,200
ULTRATECH STEPPER INC.....	30,050	27,220	576	542	147,349	193,508
XEROX CORP.....	1,079,000	1,044,000	91,400	86,700	18,166,000	17,378,000

See explanatory information and source at end of table

Table 3. Top 500 firms for R&D in 1997, by industrial sector

Major & detailed industrial sector/ corporation	Validated or adjusted R&D [In thousands of dollars]		Employees		Sales [In thousands of dollars]	
	1997	1996 ¹	1997	1996 ¹	1997	1996 ¹
	Prepackaged software.....	6,619,062	5,188,104	160,331	141,851	44,120,965
ACCLAIM ENMNT INC.....	30,824	34,582	680	930	165,411	252,469
ACTIVISION INC.....	28,393	18,195	667	366	259,926	86,483
ADOBE SYSTEMS INC.....	176,831	174,165	2,654	2,222	911,894	786,563
ASPEN TECHNOLOGY INC.....	31,153	20,208	1,239	1,040	180,299	103,609
AUTODESK INC.....	122,419	93,740	2,470	2,044	632,358	509,630
AVANT CORP.....	29,559	20,696	701	444	147,348	106,087
BAAN COMPANY NV.....	90,849	42,136	4,254	2,389	679,596	387,958
BEA SYSTEMS INC.....	43,008	80,431	800	459	157,189	61,598
BMC SOFTWARE INC.....	94,923	77,459	2,770	1,813	730,634	563,210
BOOLE & BABBAGE INC.....	25,881	19,273	880	780	197,097	167,178
BRODERBUND SOFTWARE INC.....	67,767	37,613	1,129	638	190,787	186,207
CADENCE DESIGN SYS INC.....	146,946	211,011	3,945	3,190	915,893	741,459
CHECKFREE HOLDINGS CORP.....	172,869	NA	1,444	1,200	176,445	76,789
COMPUTER ASSOCIATES INTL INC.....	369,000	437,000	NA	9,850	4,719,000	4,040,000
COMPUWARE CORP.....	57,576	66,284	8,663	6,609	1,139,318	812,896
EDWARDS J D & CO.....	60,591	40,321	3,577	NA	647,812	478,048
ELECTRONIC ARTS INC.....	146,199	118,103	2,100	1,700	908,852	624,766
FILENET CORP.....	39,575	36,502	1,490	1,443	251,425	268,913
FTP SOFTWARE INC.....	27,044	31,268	350	804	67,734	101,091
HARBINGER CORP.....	29,196	NA	1,032	680	120,675	41,725
HYPERION SOFTWARE CORP.....	33,046	28,839	1,226	1,038	222,830	172,824
I2 TECHNOLOGIES INC.....	48,720	14,661	1,006	426	200,706	76,342
IDX SYSTEMS CORP.....	38,602	23,974	1,883	1,248	251,417	157,579
INDUS INTERNATIONAL INC.....	27,664	12,493	896	463	177,034	75,939
INFINIUM SOFTWARE INC.....	23,460	13,775	549	466	87,001	71,808
INFORMIX CORP.....	146,310	120,211	3,489	4,491	662,298	727,849
INSO CORP.....	28,760	18,862	439	417	81,869	70,534
INTERSOLV.....	24,231	17,555	1,073	986	196,480	160,413
INTUIT INC.....	104,027	83,601	3,000	3,474	598,925	538,608
MANUGISTICS GROUP INC.....	31,665	17,380	NA	598	175,666	94,722
MARCAM SOLUTIONS INC.....	34,301	27,680	701	NA	163,880	201,424
MICROPROSE INC.....	29,038	23,145	385	390	60,009	100,253
MICROSOFT CORP.....	1,925,000	1,432,000	22,232	20,561	11,358,000	8,671,000
MIDWAY GAMES INC.....	55,941	32,495	400	326	388,226	245,423
NATIONAL INSTRUMENTS CORP.....	30,296	24,387	1,465	1,142	240,879	200,715
NETMANAGE INC.....	41,313	41,322	440	632	61,524	104,596
NETSCAPE COMMUNICATIONS CORP.....	129,900	83,900	2,310	1,811	533,851	346,195
NETWORKS ASSOCIATES INC.....	85,021	32,091	1,600	481	612,193	181,126
NOVEL INC.....	282,680	275,627	4,770	5,870	1,007,311	1,374,856
ON TECHNOLOGY CORP.....	28,359	22,741	142	288	41,282	51,792
OPEN MARKET INC.....	26,732	16,393	NA	NA	61,260	22,501
ORACLE CORP.....	719,143	555,476	36,802	29,431	7,143,866	5,684,336
PARAMETRIC TECHNOLOGY CORP.....	53,236	39,476	3,432	2,774	808,796	600,122

See explanatory information and source at end of table

Table 3. Top 500 firms for R&D in 1997, by industrial sector

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Major & detailed industrial sector/ corporation	Validated or adjusted R&D [In thousands of dollars]		Employees		Sales [In thousands of dollars]	
	1997	1996 ¹	1997	1996 ¹	1997	1996 ¹
	Prepackaged software—continued					
PEOPLESOFT INC.....	129,553	NA	4,452	2,490	815,651	450,052
PHOENIX TECHNOLOGIES LTD.....	26,349	20,628	572	490	82,129	72,136
PROGREE SOFTWARE CORP.....	37,797	23,951	1,090	1,108	188,314	176,690
QAD INC.....	29,317	25,623	917	700	172,234	126,444
RATIONAL SOFTWARE CORP.....	61,560	24,445	1,743	845	310,670	145,373
SANTA CRUZ OPERATION INC.....	46,130	74,968	1,082	1,188	193,660	207,890
STERLING COMMERCE INC.....	24,853	15,553	1,700	1,266	350,597	267,773
STERLING SOFTWARE INC.....	23,114	20,921	3,100	2,600	488,978	439,171
STRUCTURAL DYNAMICS RESEARCH.....	49,407	30,719	2,067	1,637	351,322	285,256
SYBASE INC.....	138,590	164,676	5,216	5,484	903,937	1,011,545
SYMANTEC CORP.....	91,332	91,974	2,300	2,000	578,361	472,183
SYNOPSIS INC.....	116,059	85,373	1,961	1,716	499,145	353,500
SYSTEM SOFTWARE ASSOC INC.....	51,700	54,400	2,400	2,200	430,500	340,800
USCS INTL INC.....	30,034	25,140	2,067	2,038	299,346	263,214
VERITAS SOFTWARE CO.....	25,219	12,662	579	175	121,125	36,090
Radio, TV, cell phone, & satellite communication eq.....	3,625,457	3,105,954	215,681	203,556	41,264,513	38,114,473
ALLEN TELECOM INC.....	26,137	20,721	3,300	2,900	432,508	369,498
GENERAL INSTRUMENT CORP.....	207,826	209,257	7,350	14,200	1,764,088	2,689,688
GLENAYRE TECHNOLOGIES INC.....	40,425	28,983	2,400	2,150	451,679	390,246
HARRIS CORP.....	174,900	159,800	29,000	27,600	3,797,200	3,621,200
MOTOROLA INC.....	2,748,000	2,394,000	150,000	139,000	29,794,000	27,973,000
P-COM INC.....	29,127	17,477	754	251	220,702	97,515
PITTSWAY CORP/DE -CL A.....	24,316	18,077	7,800	6,800	1,348,703	1,111,575
QUALCOMM INC.....	235,922	162,340	9,000	6,000	2,096,365	813,850
SCIENTIFIC-ATLANTA INC.....	114,344	95,299	5,343	4,173	1,168,245	1,047,901
VTEL CORP.....	24,460	NA	734	482	191,023	NA
Search & navigation equipment.....	767,577	665,550	206,700	158,400	27,607,499	24,474,511
LITTON INDUSTRIES INC.....	70,122	65,100	31,500	33,500	4,175,524	3,611,538
NORTHROP-GRUMMAN CORP.....	256,000	255,000	52,000	46,600	9,153,000	8,071,000
ORBITAL SCIENCES CORP.....	26,355	22,179	4,000	3,000	605,975	461,435
RAYTHEON CO -CL B.....	415,100	323,271	119,200	75,300	13,673,000	12,330,538
Machinery & electrical equipment.....	7,038,500	6,373,475	1,162,838	1,048,357	247,446,687	227,234,899
Electrical equipment (industrial & household).....	3,070,656	2,923,595	532,873	502,174	126,878,992	118,471,897
COOPER INDUSTRIES INC.....	60,900	57,300	41,200	42,400	5,288,800	5,283,700
EATON CORP.....	319,000	267,000	49,000	54,000	7,563,000	6,961,000
EVANS & SUTHERLAND CMP CORP.....	25,492	21,753	831	784	159,353	130,564
GENERAL ELECTRIC CO.....	1,480,000	1,421,000	276,000	239,000	88,540,000	78,541,000
GENERAL SIGNAL CORP.....	45,700	47,500	9,900	13,000	1,954,600	2,065,000
KOMAG INC.....	51,427	29,409	4,689	4,027	631,082	577,791
MAGNETEK INC.....	23,600	21,500	13,800	13,000	1,190,540	1,161,625
MAYTAG CORP.....	50,201	47,996	22,433	20,464	3,407,911	3,001,656
RAYCHEM CORP.....	119,336	122,137	8,650	8,697	1,764,706	1,671,561
ROCKWELL INTL CORP.....	714,000	691,000	45,000	58,639	7,762,000	10,373,000

See explanatory information and source at end of table

Table 3. Top 500 firms for R&D in 1997, by industrial sector

Major & detailed industrial sector/ corporation	Validated or adjusted R&D [In thousands of dollars]		Employees		Sales [In thousands of dollars]	
	1997	1996 ¹	1997	1996 ¹	1997	1996 ¹
	Machinery (indus., farm, services, mining & construction).....	3,967,844	3,449,880	629,965	546,183	120,567,695
WHIRLPOOL CORP.....	181,000	197,000	61,370	48,163	8,617,000	8,705,000
AGCO CORP.....	54,100	27,705	10,997	7,801	3,224,400	2,317,486
AMERN STANDARD CO INC.....	112,000	81,000	51,000	44,000	6,007,509	5,804,561
APPLIED MATERIALS INC.....	567,612	481,394	13,924	11,403	4,074,275	4,144,817
BAKER-HUGHES INC.....	59,500	44,019	21,250	16,800	3,685,400	3,027,730
BLACK & DECKER CORP.....	99,100	101,300	28,600	29,200	4,940,500	4,914,400
CAMCO INTERNATIONAL INC.....	33,160	26,267	5,500	4,570	913,841	672,732
CASE CORP.....	196,000	193,000	18,300	17,500	6,024,000	5,409,000
CATERPILLAR INC.....	528,000	410,000	59,863	57,026	18,925,000	16,522,000
CINCINNATI MILACRON INC.....	50,100	49,000	12,751	12,598	1,896,700	1,729,700
CUMMINS ENGINE.....	250,000	235,000	26,300	23,500	5,625,000	5,257,000
CYMER INC.....	24,971	11,742	809	336	203,647	64,995
DEERE & CO.....	412,300	370,300	34,400	33,919	12,636,400	11,086,400
DETROIT DIESEL CORP.....	97,500	105,200	6,500	6,200	2,163,900	1,962,900
DOVER CORP.....	114,392	98,857	28,758	26,234	4,547,656	4,076,284
ETEC SYSTEMS INC.....	34,373	17,402	902	686	240,914	145,645
FSI INTL INC.....	39,713	40,998	1,357	1,412	252,441	304,041
GENERAL SCANNING INC.....	32,902	18,400	915	779	181,530	156,533
HARNISCHFEGER INDUSTRIES INC.....	40,094	34,471	17,700	17,100	3,118,243	2,887,570
ILLINOIS TOOL WORKS.....	52,021	55,800	25,700	24,400	5,220,430	4,996,681
INGERSOLL-RAND CO.....	215,500	209,300	46,567	41,874	7,103,300	6,647,900
INTEGRATED PROCESS EQ.....	23,951	19,871	965	1,042	144,688	184,500
KENNAMETAL INC.....	24,105	20,585	7,550	7,260	1,156,343	1,079,963
KULICKE & SOFFA INDUSTRIES.....	46,030	50,404	2,319	1,925	501,907	381,176
LAM RESEARCH CORP.....	170,624	173,013	4,800	4,500	1,002,404	1,276,884
NACCO INDUSTRIES -CL A.....	27,900	27,000	13,400	11,800	2,246,900	2,273,200
NORDSON CORP.....	29,812	30,471	4,024	3,823	636,710	609,444
NOVELLUS SYSTEMS INC.....	89,876	53,902	1,776	1,143	534,004	461,736
PALL CORP.....	53,747	47,514	8,500	7,700	1,062,008	960,376
PREMARK INTERNATIONAL INC.....	46,000	39,000	17,200	16,300	2,406,800	2,267,600
PRI AUTOMATION INC.....	24,634	17,089	928	701	169,465	110,684
SILICON VALLEY GROUP INC.....	73,901	66,974	3,389	3,072	594,957	639,928
SPX CORP.....	24,100	24,600	4,593	7,125	922,316	1,109,422
TECUMSEH PRODUCTS CO -CL A.....	32,600	30,400	17,400	16,300	1,728,300	1,784,600
THERMEDICS INC.....	24,270	17,704	1,876	1,564	307,666	258,085
TIMKEN CO.....	43,000	41,000	20,994	19,130	2,617,562	2,394,757
TORO CO.....	36,574	31,343	3,908	3,280	1,051,204	930,909
TYCO INTERNATIONAL LTD.....	45,000	33,480	75,400	40,000	7,588,200	5,089,828
UNOVA INC.....	53,100	29,700	7,060	NA	1,426,247	1,164,682
WATKINS-JOHNSON.....	54,682	56,675	1,520	2,080	291,271	438,319
YORK INTL.....	30,600	28,000	20,270	20,100	3,193,657	3,218,534

See explanatory information and source at end of table

Table 3. Top 500 firms for R&D in 1997, by industrial sector

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Major & detailed industrial sector/ corporation	Validated or adjusted R&D [In thousands of dollars]		Employees		Sales [In thousands of dollars]	
	1997	1996 ¹	1997	1996 ¹	1997	1996 ¹
	Medical substances & devices	19,849,094	17,635,079	682,214	658,802	167,633,078
Drugs: biological products, except diagnostic substances.....	1,504,594	1,216,684	15,235	12,671	4,106,957	3,552,625
AMGEN INC.....	630,800	528,300	5,308	4,646	2,401,000	2,239,800
AVIRON.....	24,254	14,997	NA	NA	1,477	1,625
BIOGEN INC.....	145,501	132,384	797	675	411,909	259,704
CELL GENESYS INC.....	36,830	5,987	151	147	24,703	26,371
CENTOCOR INC.....	68,623	56,787	640	545	200,784	135,485
CREATIVE BIOMOLECULES INC.....	25,122	15,651	212	191	13,087	21,156
CYTOTHERAPEUTICS INC.....	26,947	17,130	120	127	10,617	7,104
GENZYME CORP.....	74,200	55,529	3,500	3,516	608,841	518,754
GILEAD SCIENCES INC.....	59,162	41,881	289	248	40,037	33,420
HYBRIDON INC.....	46,828	39,391	78	206	2,870	2,562
IDEC PHARMACEUTICALS CORP.....	32,407	26,763	339	268	35,340	30,009
IMMUNE RESPONSE CORP/DE.....	34,090	27,211	143	146	2,000	7,000
IMMUNEX CORP.....	109,312	96,612	886	808	185,297	151,198
LIPOSOME COMPANY INC.....	28,894	29,371	280	407	60,783	56,068
MEDIMMUNE INC.....	40,669	32,192	344	252	80,964	41,099
NEUREX CORP.....	28,474	19,662	140	75	2,392	3,576
PATHOGENESIS CORP.....	28,018	20,673	159	115	442	440
SUGEN INC.....	34,585	29,792	189	160	6,031	13,650
XOMA CORP.....	29,878	26,371	1,660	139	18,383	3,604
Drugs: in vitro, in vivo diagnostic substances.....	592,959	512,323	15,606	18,830	3,091,440	3,512,260
ALLIANCE PHARMACEUTICAL CP.....	43,278	33,730	213	194	44,580	17,323
CHIRON CORP.....	296,455	267,303	6,482	7,434	1,055,702	1,210,783
CYTOGEN CORP.....	24,258	19,815	167	164	14,420	5,730
HUMAN GENOME SCIENCES INC.....	46,140	40,472	353	284	25,605	36,460
MALLINCKRODT INC.....	108,000	116,200	7,871	10,395	1,861,200	2,210,200
MILLENNIUM PHARMACTCLS INC.....	74,828	34,803	520	359	89,933	31,764
Drugs: pharmaceutical preparations.....	15,733,395	14,138,527	514,369	499,991	137,359,581	125,980,191
ABBOTT LABORATORIES.....	1,302,403	1,204,841	54,487	52,817	11,883,462	11,013,460
AGOURON PHARMACEUTICALS INC.....	108,137	71,010	708	374	132,063	55,955
ALLERGAN INC.....	131,200	118,300	6,112	6,124	1,149,000	1,147,000
ALPHA BETA TECHNOLOGY INC.....	27,392	25,675	103	170	81	138
ALPHARMA INC -CL A.....	32,068	34,269	2,600	2,550	500,288	486,184
ALTEON INC.....	23,264	17,494	47	54	NA	NA
ALZA CORP.....	30,600	26,800	1,532	1,652	464,400	406,300
AMERICAN HOME PRODUCTS CORP.....	1,558,035	1,429,056	60,523	59,747	14,196,026	14,088,326
AMYLIN PHARMACEUTICALS INC.....	82,281	64,998	278	214	42,609	35,803
AXYS PHARMACEUTICALS INC.....	31,050	24,319	395	160	24,814	21,560
BRISTOL MYERS SQUIBB.....	1,385,000	1,276,000	53,600	51,200	16,701,000	15,065,000
CELL THERAPEUTICS INC.....	27,285	16,109	179	118	11,831	9,121
CEPHALON INC.....	51,587	62,096	282	303	23,140	21,366

See explanatory information and source at end of table

Table 3. Top 500 firms for R&D in 1997, by industrial sector

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Major & detailed industrial sector/ corporation	Validated or adjusted R&D [In thousands of dollars]		Employees		Sales [In thousands of dollars]	
	1997	1996 ¹	1997	1996 ¹	1997	1996 ¹
	Drugs: pharmaceutical preparations—continued					
COCENSYS INC.....	23,308	18,771	90	176	11,914	15,158
COR THERAPEUTICS INC.....	47,831	50,617	182	177	22,190	18,755
GENENTECH INC.....	403,327	434,092	3,242	3,071	947,588	846,368
GENSIA SICOR INC.....	55,318	31,081	NA	474	149,681	58,302
GUILFORD PHARMACEUTICAL INC.....	30,293	17,850	198	138	23,828	28,020
ICOS CORPORATION.....	42,783	30,011	252	212	31,576	2,000
INHALE THERAPEUTIC SYSTEMS.....	23,645	14,376	147	92	16,249	6,890
INTERNEURON PHARMACEUTICALS.....	53,909	26,408	171	139	67,863	22,497
ISIS PHARMACEUTICALS INC.....	24,940	16,653	338	287	32,470	22,572
IVAX CORP.....	53,409	73,353	4,500	8,162	602,110	1,151,307
JOHNSON & JOHNSON.....	2,140,000	1,905,000	90,500	89,300	22,629,000	21,620,000
LILLY (ELI) & CO.....	1,382,000	1,189,500	31,100	29,200	8,517,600	7,346,600
MATRIX PHARMACEUTICAL INC.....	27,214	24,320	105	157	NA	NA
MERCK & CO.....	1,683,700	1,487,300	53,800	49,100	23,636,900	19,828,699
MYLAN LABORATORIES.....	46,278	42,633	1,946	1,750	555,423	440,192
NEXSTAR PHARMACEUTICALS.....	49,315	46,560	558	543	92,221	88,701
PFIZER INC.....	1,928,000	1,684,000	49,200	47,000	12,504,000	11,306,000
PHARMACIA & UPJOHN INC.....	1,217,000	1,266,000	30,000	31,700	6,710,000	7,286,000
REGENERON PHARMACEUT.....	27,770	28,269	270	243	26,858	19,754
SCHERER (R P)/D.....	25,386	19,979	3,600	3,500	620,716	588,699
SCHERING-PLOUGH.....	847,000	722,800	22,700	20,600	6,778,000	5,655,800
SEQUUS PHARMACEUTICALS INC.....	32,474	27,652	260	247	39,952	32,923
VERTEX PHARMACEUTICALS INC.....	51,624	35,212	223	181	29,926	13,341
VIMRX PHARMACEUTICALS INC.....	54,369	20,323	141	59	5,002	NA
WARNER-LAMBERT CO.....	672,200	554,800	40,000	38,000	8,179,800	7,231,400
Medical instruments.....	2,018,146	1,767,545	137,004	127,310	23,075,100	20,579,972
ACUSON CORP.....	57,286	60,926	1,815	1,777	437,762	346,155
AFFYMETRIX INC.....	28,168	18,800	242	161	19,765	11,972
ATL ULTRASOUND INC.....	59,710	53,969	2,669	2,703	431,244	419,157
BARD (C.R.) INC.....	85,800	77,300	9,550	9,800	1,213,500	1,194,400
BAXTER INTERNATIONAL INC.....	392,000	340,000	41,000	37,000	6,138,000	5,438,000
BECTON DICKINSON & CO.....	180,626	154,220	18,900	17,900	2,810,523	2,769,756
BOSTON SCIENTIFIC CORP.....	196,669	212,295	11,000	9,580	1,872,282	1,462,043
DATASCOPE CORP.....	26,815	24,275	1,200	1,200	225,600	211,300
DEPUY INC.....	28,419	21,693	3,217	2,926	770,188	697,273
GUIDANT CORP.....	208,300	152,500	6,017	4,449	1,328,200	1,048,500
INCONTROL INC.....	24,927	23,112	223	169	1,976	306
MARQUETTE MEDICAL SYS.....	52,594	48,106	3,125	3,150	578,260	543,317
MEDTRONIC INC.....	297,177	280,214	13,954	13,719	2,604,819	2,438,224
SPACELABS MED INC.....	65,581	37,090	1,600	1,374	265,279	247,953
ST JUDE MEDICAL INC.....	104,693	74,841	3,772	3,620	994,396	808,780
STERIS CORP.....	23,914	21,986	4,500	4,000	719,656	587,852
STRYKER CORP.....	56,895	64,370	5,691	5,274	980,135	910,060

See explanatory information and source at end of table

Table 3. Top 500 firms for R&D in 1997, by industrial sector

Major & detailed industrial sector/ corporation	Validated or adjusted R&D [In thousands of dollars]		Employees		Sales [In thousands of dollars]	
	1997	1996 ¹	1997	1996 ¹	1997	1996 ¹
	Medical instruments—continued					
THERMOTREX CORP.....	32,067	24,986	1,712	1,383	282,121	182,029
TREX MEDICAL CORP.....	24,705	18,862	1,041	992	229,294	150,195
U.S. SURGICAL CORP.....	71,800	58,000	5,776	6,133	1,172,100	1,112,700
Motor vehicles & other surface transportation equipment.....	18,380,209	19,293,486	1,549,581	1,555,668	455,837,250	433,585,092
Ships, trains, motorcycles, bicycles, campers, military tanks.....	286,808	250,714	85,060	76,051	12,868,704	11,380,938
BRUNSWICK CORP.....	89,400	86,500	25,300	22,800	3,657,400	3,160,300
GENERAL DYNAMICS CORP.....	55,000	38,000	29,000	23,100	4,062,000	3,581,000
HARLEY-DAVIDSON INC.....	53,300	37,700	6,060	5,470	1,829,567	1,577,737
NEWPORT NEWS SHIPBUILDING.....	38,000	42,000	18,400	18,000	1,707,000	1,870,000
POLARIS INDS INC.....	26,722	28,270	2,900	3,500	1,048,296	1,191,901
WESTINGHOUSE AIR BRAKE CO.....	24,386	18,244	3,400	3,181	564,441	453,512
Motor vehicles & motor vehicle equipment.....	18,093,401	19,042,772	1,464,521	1,479,617	442,968,546	422,204,154
ARVIN INDUSTRIES INC.....	25,300	26,200	14,324	12,982	2,349,000	2,212,700
BORG WARNER AUTO.....	59,000	54,400	10,400	9,800	1,767,000	1,540,100
BREED TECHNOLOGIES INC.....	36,121	24,090	11,100	7,000	794,973	435,665
CHRYSLER CORP.....	1,700,000	1,600,000	121,000	126,000	58,622,000	59,333,000
DANA CORP.....	193,000	164,000	47,900	46,100	8,769,400	7,889,500
ECHLIN INC.....	51,844	44,711	31,300	27,700	3,568,572	3,128,728
EXCEL INDUSTRIES INC.....	25,245	17,237	6,652	6,107	962,333	887,741
FORD MOTOR CO.....	6,327,000	6,821,000	363,892	371,702	153,627,000	146,991,000
GENERAL MOTORS CORP.....	8,200,000	8,900,000	608,000	647,000	168,190,000	160,121,000
ITT INDUSTRIES INC.....	496,900	535,200	58,500	59,000	8,777,100	8,718,100
MERITOR AUTOMOTIVE INC.....	54,000	51,000	16,900	15,300	3,309,000	3,144,000
NAVISTAR INTERNATIONAL.....	92,000	101,000	16,168	14,187	6,321,000	5,705,000
PACCAR INC.....	84,000	47,000	19,000	17,000	6,751,900	4,584,700
STANDARD PRODUCTS CO.....	45,991	40,934	10,350	10,177	1,108,268	1,083,920
TENNECO INC.....	53,000	60,000	49,335	44,362	7,220,000	6,572,000
TRW INC.....	650,000	556,000	79,700	65,200	10,831,000	9,857,000

¹ Note that the 1996 aggregates, for major and minor sectors, of R&D expenditures, employees and sales, are in reference to the top 500 firms of 1997, not the top 500 firms of 1996, which is a somewhat different list of firms. Therefore, in comparing 1996 to 1997 changes in these aggregates, it is generally preferable to use 1996 aggregates of the top 500 firms in 1996, which are provided in table 4.

KEY: NA = not available.

SOURCE: Standard & Poor's Compustat, Englewood, CO

Table 4. Comparison of 1996 and 1997 top 500 corporations corporations for R&D by detailed sector and firm: R&D, employment, and sales

	R&D		Employment		Sales		Percent change from 1996-97
	In thousands of dollars		Number of employees		In thousands of dollars		
	1996	1997	1996	1997	1996	1997	
Major & detailed industrial sector/top 500 corporations ¹							
1997							
1996							
All of the top 500 corporations (across all industries)	102,212,335	111,368,541	10,673,673	10,650,175	2,567,942,770	2,663,277,692	-0.2
Aircraft, guided missiles & space vehicles							
ALLIEDSIGNAL INC.	4,177,500	4,672,800	736,783	762,298	115,323,800	130,291,000	3.5
BOEING CO.	345,000	349,000	76,600	70,500	13,971,000	14,472,000	-8.0
GENCORP INC.	1,200,000	1,924,000	143,000	238,000	22,681,000	45,800,000	66.4
GOODRICH (B F) CO.	31,000	28,000	8,950	9,460	1,515,000	1,568,000	5.7
LOCKHEED MARTIN CORP.	100,500	101,800	14,160	16,838	2,238,800	3,373,000	18.9
SUNDSTRAND CORP.	784,000	788,000	190,000	173,000	26,875,000	28,069,000	-8.9
TEXTRON INC.	55,000	73,000	9,400	10,400	1,521,000	1,752,000	10.6
UNITED TECHNOLOGIES CORP.	185,000	222,000	57,000	64,000	9,274,000	10,544,000	12.3
MCDONNELL DOUGLAS CORP.	1,122,000	1,187,000	173,800	180,100	23,434,000	24,713,000	3.6
	355,000		63,873		13,814,000		
Basic industries & materials	7,963,432	8,355,329	2,057,850	2,056,390	735,636,514	728,194,509	-0.1
Agr. services: forestry: fishing: mining: construction							
DEKALB GENETICS CORP -CL B	183,600	203,300	6,620	7,031	2,108,500	2,235,400	6.2
PIONEER HI-BRED INTERNATIONAL	47,600	57,300	1,882	2,037	387,500	451,400	8.2
Fabricated metal products, except machinery & transp. eq.	136,000	146,000	4,738	4,994	1,721,000	1,784,000	5.4
AEROQUIP-VICKERS INC.	476,244	508,038	176,762	172,812	31,237,141	31,236,739	-2.2
CROWN CORK & SEAL CO INC.	74,892	72,161	15,162	14,780	2,032,915	2,112,293	-2.5
DANAHER CORP.	51,500	53,100	44,611	40,985	8,331,900	8,494,600	-8.1
FORTUNE BRANDS INC.	46,964	57,008	11,600	13,200	1,811,878	2,050,968	13.8
GILLETTE CO.	40,200	46,600	28,000	24,920	5,776,300	4,425,797	-11.0
PARKER-HANNIFIN CORP.	204,000	212,000	44,100	44,000	9,697,700	10,062,000	-0.2
	58,688	67,169	33,289	34,927	3,586,448	4,091,081	4.9

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations corporations for R&D by detailed sector and firm: R&D, employment, and sales

	R&D						Employment				Sales	
	1997		1996		As a percent of the total 500 in 1997	Percent change from 1996-97	Number of employees		Percent change from 1996-97	In thousands of dollars		Percent change from 1996-97
			1996	1997			1996	1997		1996	1997	
Major & detailed industrial sector/top 500 corporations ¹												
Food & kindred products;												
tobacco products												
BEST FOODS		1,195,600	1,187,900	1.07	-0.6	457,534	441,424	-3.5	120,006,208	118,903,836	-0.9	
CAMPBELL SOUP CO.		73,000	66,000	0.06	-9.6	55,300	44,200	-20.1	9,844,000	8,400,000	-14.7	
HERSHEY FOODS CORP.		84,000	77,000	0.07	-8.3	40,650	37,000	-9.0	7,678,000	7,964,000	3.7	
KELLOGG CO.		26,100	27,500	0.02	5.4	15,300	16,200	5.9	3,989,308	4,302,236	7.8	
NABISCO HLDGS CORP -CL A		84,300	106,100	0.10	25.9	14,511	14,339	-1.2	6,676,600	6,830,100	2.3	
PHILIP MORRIS COS INC.		105,000	95,000	0.09	-9.5	54,000	53,000	-1.9	8,889,000	8,734,000	-1.7	
QUAKER OATS CO.		515,000	533,000	0.48	3.5	154,000	152,000	-1.3	54,553,000	56,114,000	2.9	
RALSTON PURINA CO.		33,000	34,900	0.03	5.8	14,800	14,123	-4.6	5,199,000	5,015,700	-3.5	
RJR NABISCO HLDGS CORP.		84,200	70,400	0.06	-16.4	29,273	30,162	3.0	6,114,300	4,486,800	-26.6	
Lumber, wood products, & furniture												
BE AEROSPACE INC.		191,000	178,000	0.16	-6.8	79,700	80,400	0.9	17,063,000	17,057,000	0.0	
HILLENBRAND INDUSTRIES.		433,083	543,085	0.49	25.4	162,303	185,603	14.4	31,877,279	34,722,299	8.9	
JOHNSON CONTROLS INC.		37,083	45,685	0.04	23.2	3,140	NA	NA	412,379	487,999	18.3	
LEAR CORP.		42,000	49,000	0.04	16.7	9,800	10,100	3.1	1,684,000	1,776,000	5.5	
STEELCASE INC.		165,000	232,000	0.21	40.6	65,800	72,300	9.9	10,009,400	11,145,400	11.3	
WEYERHAEUSER CO.		70,000	90,400	0.08	29.1	43,902	51,025	16.2	6,249,100	7,342,900	17.5	
Misc. products (leather, toys, jewelry, musical inst.)												
CALLAWAY GOLD CO.		65,000	70,000	0.06	7.7	NA	16,400	NA	2,408,400	2,760,000	14.6	
HASBRO INC.		54,000	56,000	0.05	3.7	39,661	35,778	-9.8	11,114,000	11,210,000	0.9	
INTL GAME TECHNOLOGY		304,429	372,432	0.33	22.3	41,800	42,262	1.1	7,521,780	9,610,072	27.8	
MATTEL INC.		152,487	154,710	0.14	1.5	2,662	2,662	-7.7	842,927	842,927	0.0	
Printing, publishing, & allied industries												
DOW JONES & CO INC.		25,701	31,074	0.03	20.9	2,800	2,600	-7.1	3,002,370	3,188,559	6.2	
REYNOLDS & REYNOLDS -CL A		126,241	156,350	0.14	23.9	26,000	25,000	-3.8	733,452	743,970	1.4	
DOW JONES & CO INC.		98,413	159,472	0.14	62.0	19,388	21,447	10.6	3,785,958	4,834,616	27.7	
REYNOLDS & REYNOLDS -CL A		73,974	116,420	0.10	57.4	11,844	12,309	3.9	3,582,035	3,958,203	10.5	
		24,439	43,052	0.04	76.2	7,544	9,138	21.13	2,481,592	2,572,518	3.7	

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations corporations for R&D by detailed sector and firm: R&D, employment, and sales

	R&D						Employment			Sales	
	In thousands of dollars		As a percent of the total 500 in 1997	Percent change from 1996-97	Number of employees		Percent change from 1996-97	In thousands of dollars		Percent change from 1996-97	
	1996	1997			1996	1997		1996	1997		
Major & detailed industrial sector/top 500 corporations ¹											
1997	1996										
Stone, clay, glass, & concrete products											
CORNING INC.....	360,791	412,266	0.37	14.3	80,900	90,200	11.5	13,354,200	15,479,542	15.9	
DONNELLY CORP.....	191,300	250,700	0.23	31.1	20,000	20,500	2.5	3,684,500	4,129,100	12.1	
JOHNS MANVILLE INTL GRP INC.....	27,728	32,492	0.03	17.2	3,100	5,000	61.3	439,571	671,297	52.7	
OWENS CORNING.....	32,663	31,174	0.03	-4.6	8,100	8,300	2.5	1,552,429	1,647,645	6.1	
OWENS-ILLINOIS INC.....	78,000	69,000	0.06	-11.5	18,900	24,000	27.0	3,832,000	4,373,000	14.1	
Textile & apparel products											
ALBANY INTL CORP -CL A.....	31,100	28,900	0.03	-7.1	30,800	32,400	5.2	3,845,700	4,668,500	21.1	
DEXTER CORP.....	73,449	77,091	0.07	5.0	10,454	10,681	2.2	1,792,945	1,857,134	3.6	
Oil & gas extraction; petrol. refining & related ind.											
AMOCO CORP.....	21,945	23,070	0.02	5.1	5,854	5,881	0.5	692,760	710,079	2.5	
ASHLAND INC.....	51,504	54,021	0.05	4.9	4,600	4,800	4.3	1,100,185	1,147,055	4.3	
ATLANTIC RICHFIELD CO.....	2,367,808	2,474,105	2.22	4.5	494,235	509,180	3.0	402,872,740	394,692,040	-2.0	
CHEVRON CORP.....	171,000	151,000	0.14	-11.7	41,723	43,451	4.1	32,150,000	31,910,000	-0.7	
DRESSER INDUSTRIES INC.....	27,000	29,000	0.03	7.4	36,100	37,200	3.0	12,227,000	13,327,000	9.0	
EXXON CORP.....	106,000	120,000	0.11	13.2	22,800	24,000	5.3	18,592,000	18,684,000	0.5	
HALLIBURTON CO.....	182,000	179,000	0.16	-1.6	40,820	39,362	-3.6	37,580,000	35,009,000	-6.8	
MOBIL CORP.....	110,600	120,000	0.11	8.5	33,172	31,300	-5.6	6,533,200	7,419,100	13.6	
PHILLIPS PETROLEUM CO.....	520,000	529,000	0.47	1.7	79,000	80,000	1.3	116,728,000	120,279,000	3.0	
SCHLUMBERGER LTD.....	133,300	164,700	0.15	23.6	60,000	70,750	17.9	7,279,600	8,694,200	19.4	
SHELL OIL CO.....	206,000	234,000	0.21	13.6	43,000	42,700	-0.7	71,129,000	58,399,000	-17.9	
TEXACO INC.....	59,000	56,000	0.05	-5.1	17,200	17,100	-0.6	15,731,000	15,210,000	-3.3	
WESTERN ATLAS INC.....	452,608	486,205	0.44	7.4	57,000	63,500	11.4	8,956,150	10,647,590	18.9	
	173,000	199,000	0.18	15.0	20,463	19,904	-2.7	28,823,000	28,268,000	-1.9	
	139,000	147,000	0.13	5.8	28,957	29,313	1.2	44,561,000	45,187,000	1.4	
	88,300	59,200	0.05	-33.0	14,000	10,600	-24.3	2,582,790	1,658,150	-35.8	

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations corporations for R&D by detailed sector and firm: R&D, employment, and sales

	R&D						Employment				Sales	
	In thousands of dollars		As a percent of the total 500 in 1997	Percent change from 1996-97	Number of employees		Percent change from 1996-97	In thousands of dollars		Percent change from 1996-97		
	1996	1997			1996	1997		1996	1997			
Major & detailed industrial sector/top 500 corporations ¹	1996											
Paper & allied products	1,462,562	1,515,944	1.36	3.6	287,587	292,113	1.6	63,499,747	65,776,346	3.6		
AVERY DENNISON CORP.....	54,600	61,100	0.05	11.9	15,800	16,200	2.5	3,222,500	3,345,700	3.8		
FORT JAMES CORP.....	46,400	40,900	0.04	-11.9	23,000	29,000	26.1	5,690,500	7,259,000	27.6		
INTL PAPER CORP.....	112,500	99,900	0.09	-11.2	87,000	82,000	-5.7	20,143,000	20,096,000	-0.2		
KIMBERLY-CLARK CORP.....	207,900	211,800	0.19	1.9	54,800	57,000	4.0	13,149,100	12,546,600	-4.6		
MINNESOTA MINING & MFG CO.....	947,000	1,002,000	0.90	5.8	74,289	75,639	1.8	14,236,000	15,070,000	5.9		
UNION CAMP CORP.....	55,900	57,300	0.05	2.5	19,268	18,904	-1.9	4,013,197	4,476,758	11.6		
WESTVACO CORP.....	38,262	42,944	0.04	12.2	13,430	13,370	-0.4	3,045,450	2,982,288	-2.1		
Ferrous metal products	91,200	60,300	0.05	-33.9	41,500	22,000	-47.0	8,494,600	3,745,100	-55.9		
ALLEGHENY TELEDYNE INC.....	66,200	60,300	0.05	-8.9	24,000	22,000	-8.3	3,815,600	3,745,100	-1.8		
BETHLEHEM STEEL CORP.....	25,000				17,500			4,679,000				
ALUMINUM CO OF AMERICA.....	324,503	286,676	0.26	-11.7	126,231	117,002	-7.3	26,194,306	24,699,228	-5.7		
ANDREW CORP.....	165,500	143,200	0.13	-13.5	76,800	81,600	6.3	13,061,000	13,319,200	2.0		
ENGELHARD CORP.....	33,003	41,076	0.04	24.5	4,622	4,227	-8.5	793,575	869,475	9.6		
REYNOLDS METALS & CO.....	56,500	61,400	0.06	8.7	6,300	5,675	-9.9	3,177,231	3,629,553	14.2		
KAISER ALUMINUM CORP.....	49,000	41,000	0.04	-16.3	29,000	25,500	-12.1	6,972,000	6,881,000	-1.3		
20,500					9,509			2,190,500				
Rubber & misc. plastic prod. (tires, plastic footwear, etc.)	591,750	554,720	0.50	-6.3	152,536	144,635	-5.2	23,095,033	21,278,570	-7.9		
ARMSTRONG WORLD INDS INC.....	59,300	47,800	0.04	-19.4	10,580	10,643	0.6	2,156,400	2,198,700	2.0		
COLTEC INDUSTRIES.....	44,125	46,548	0.04	5.5	8,153	9,072	11.3	1,159,691	1,314,869	13.4		
GOODYEAR TIRE & RUBBER CO.....	374,500	384,100	0.34	2.6	91,310	95,302	4.4	13,112,800	13,155,100	0.3		
MARK IV INDUSTRIES INC.....	44,500	48,500	0.04	9.0	15,800	17,000	7.6	2,076,000	2,210,200	6.5		
RUBBERMAID INC.....	29,505	27,772	0.02	-5.9	13,861	12,618	-9.0	2,354,989	2,399,701	1.9		
APTARGROUP INC.....	20,120				3,900			615,808				
COOPER TIRE & RUBBER.....	19,700				8,932			1,619,345				

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

	Major & detailed industrial sector/top 500 corporations ¹											
	1997		1996		R&D			Employment			Sales	
	In thousands of dollars	As a percent of the total 500 in 1997	Percent change from 1996-97	Number of employees	Percent change from 1996-97	In thousands of dollars	Percent change from 1996-97	In thousands of dollars	Percent change from 1996-97			
Chemicals												
Industrial chem.; plastic & other synthetic materials												
AIR PRODUCTS & CHEMICALS INC.....	6,531,070	6.13	4.4	667,231	1.6	6,821,613	1.6	209,481,018	1.6	209,664,483	0.1	
AIR PRODUCTS & CHEMICALS INC.....	4,029,550	3.86	6.6	315,419	-1.0	4,295,342	-1.0	120,452,214	-1.0	117,681,699	-2.3	
ALBEMARLE CORP.....	114,000	0.10	-0.3	15,200	7.9	113,700	7.9	4,008,000	7.9	4,637,800	15.7	
ARCO CHEMICAL CO.....	30,442	0.03	3.3	2,800	-3.6	31,446	-3.6	854,481	-3.6	829,850	-2.9	
BORDEN INC.....	81,000	0.07	1.2	4,000	5.0	82,000	5.0	3,955,000	5.0	3,995,000	1.0	
BUSH BOAKE ALLEN INC.....	41,100	0.02	-39.4	11,500	-30.4	24,900	-30.4	3,681,300	-30.4	1,487,700	-59.6	
CROMPTON & KNOWLES CORP.....	22,481	0.02	5.2	2,103	-6.6	23,640	-6.6	449,365	-6.6	490,585	9.2	
DOW CHEMICAL.....	52,359	0.05	2.4	5,665	-2.6	53,611	-2.6	1,803,969	-2.6	1,851,180	2.6	
DU PONT (E I) DE NEMOURS.....	761,000	0.70	3.2	40,289	6.4	785,000	6.4	20,079,000	6.4	20,065,000	-0.1	
EASTMAN CHEMICAL CO.....	1,032,000	1.03	10.7	97,000	-8.2	1,142,200	-8.2	38,504,000	-8.2	39,911,000	3.7	
ETHYL CORP.....	184,000	0.17	3.8	17,505	-16.7	191,000	-16.7	4,782,000	-16.7	4,678,000	-2.2	
FERRO CORP.....	47,371	0.04	-11.0	1,800	0.2	42,168	0.2	1,149,651	0.2	1,063,615	-7.5	
INTL FLAVORS & FRAGRANCES.....	23,800	0.02	11.8	6,912	0.9	26,600	0.9	1,355,685	0.9	1,381,280	1.9	
LUBRIZOL CORP.....	93,545	0.08	-5.4	4,629	-1.5	94,411	-1.5	1,436,053	-1.5	1,426,791	-0.6	
MILLENNIUM CHEMICAL INC.....	39,000	0.03	-28.2	4,358	29.0	88,400	29.0	1,597,562	29.0	1,673,782	4.8	
MONSANTO CO.....	728,000	0.84	29.0	28,000	-25.6	28,000	-25.6	3,040,000	-25.6	3,048,000	0.3	
OLIN CORP.....	39,000	0.03	-25.6	9,300	9.7	939,000	9.7	9,262,000	9.7	7,514,000	-18.9	
PRAXAIR INC.....	72,000	0.07	7.5	25,271	-25.9	29,000	-25.9	2,638,000	-25.9	2,410,000	-8.6	
ROHM & HAAS CO.....	187,000	0.18	-1.3	11,633	5.7	79,000	5.7	4,449,000	5.7	4,735,000	6.4	
SOLUTIA INC.....	81,000	0.05	-1.8	8,800	0.6	201,000	0.6	3,982,000	0.6	3,999,000	0.4	
UNION CARBIDE CORP.....	159,000	0.14	0.3	11,745	-11.2	60,000	-11.2	2,977,000	-11.2	2,969,000	-0.3	
UNIVERSAL FOODS CORP.....	29,824	0.03	5.7	4,035	2.3	157,000	2.3	6,106,000	2.3	6,502,000	6.5	
WITCO CORP.....	73,088	0.06	-1.8	6,724	2.4	31,510	2.4	806,352	2.4	825,714	2.4	
INTL SPECIALTY PRODS INC.....	25,400			2,700		71,756		2,263,327		2,187,402	-3.4	
MINERALS TECHNOLOGIES INC.....	19,740			2,250				716,481				
								555,988				

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

	Major & detailed industrial sector/top 500 corporations ¹											
	R&D					Employment					Sales	
	In thousands of dollars		As a percent of the total 500 in 1997	Percent change from 1996-97	Number of employees		Percent change from 1996-97	In thousands of dollars		Percent change from 1996-97		
1997	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997		
Other chem. (soaps, ink, paints, fertilizers, explosives, etc.)												
AVON PRODUCTS	2,501,520	2,526,271	2.27	1.0	351,812	365,412	3.9	89,028,804	91,982,784	3.3		
BETZDEARBORN INC.	30,200	29,900	0.03	-1.0	33,700	34,995	3.8	4,814,200	5,079,400	5.5		
CARTER-WALLACE INC.	35,700	38,800	0.03	8.7	6,185	6,405	3.6	1,037,000	1,294,800	24.9		
COLOROX CO/DE	27,284	28,785	0.03	5.5	3,460	3,360	-2.9	651,955	665,056	2.0		
COLGATE-PALMOLIVE CO.	45,821	50,489	0.05	10.2	5,300	5,500	3.8	2,225,465	2,541,042	14.2		
CYTEC INDUSTRIES INC.	162,700	169,400	0.15	4.1	37,900	37,800	-0.3	8,749,000	9,056,700	3.5		
ECOLAB INC.	40,200	44,700	0.04	11.2	4,700	5,200	10.6	1,259,600	1,290,600	2.5		
FMC CORP.	28,676	30,420	0.03	6.1	9,573	10,210	6.7	1,490,009	1,640,352	10.1		
FULLER (H B) CO.	189,400	174,000	0.16	-8.1	22,048	16,805	-23.8	4,969,398	4,259,000	-14.3		
GRACE (W R) CO.	25,823	24,830	0.02	-3.8	5,900	6,000	1.7	1,275,716	1,306,789	2.4		
GREAT LAKES CHEMICAL CORP.	93,900	42,400	0.04	-54.8	17,400	6,300	-63.8	3,454,100	1,479,700	-57.2		
HERCULES INC.	64,000	42,000	0.04	-34.4	7,000	5,100	-27.1	2,211,704	1,311,227	-40.7		
LAUDER ESTEE COS INC -CL A.	56,000	53,000	0.05	-5.4	7,114	6,221	-12.6	2,060,000	1,866,000	-9.4		
MORTON INTERNATIONAL INC.	32,900	35,300	0.03	7.3	13,500	14,700	8.9	3,194,500	3,381,600	5.9		
NALCO CHEMICAL CO.	80,200	58,800	0.05	-26.7	14,100	10,500	-25.5	3,647,100	2,381,400	-34.7		
PPG INDUSTRIES INC.	41,900	43,000	0.04	2.6	6,502	6,905	6.2	1,303,500	1,433,700	10.0		
PROCTOR & GAMBLE CO.	239,100	250,000	0.22	4.6	31,300	31,900	1.9	7,218,100	7,379,000	2.2		
REVLON CONSUMER PROD CP.	1,221,000	1,282,000	1.15	5.0	103,000	106,000	2.9	35,284,000	35,764,000	1.4		
SHERWIN-WILLIAMS CO.	26,300	29,700	0.03	12.9	14,300	16,000	11.9	2,167,000	2,390,900	10.3		
SMITH INTERNATIONAL INC.	24,748	24,748	0.02			24,964			4,881,103			
VALSPAR CORP.	27,800	34,900	0.03	25.5	5,975	7,342	22.9	1,156,658	1,563,144	35.1		
Engineering, accounting, & research/testing services	32,616	39,099	0.04	19.9	2,855	3,205	12.3	859,799	1,017,271	18.3		
CERIDIAN CORP.	125,341	138,309	0.12	10.3	25,800	52,300	102.7	2,922,852	5,624,956	92.4		
EG&G INC.	82,500	70,200	0.06	-14.9	10,800	8,000	-25.9	1,495,600	1,074,800	-28.1		
SCIENCE APPLCTNS INTL.	42,841	44,907	0.04	4.8	15,000	14,000	-6.7	1,427,252	1,460,805	2.4		
		23,202	0.02			30,300			3,089,351			

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

	1997		1996		R&D			Employment			Sales		
	Major & detailed industrial sector/top 500 corporations ¹				In thousands of dollars	As a percent of the total 500 in 1997	Percent change from 1996-97	Number of employees		Percent change from 1996-97	In thousands of dollars		Percent change from 1996-97
			1996	1997				1996	1997		1996	1997	
Finance, insurance, real estate													
INTERDIGITAL COMMUN CORP.....			47,863	81,048	0.07	0.07	69.3	1,411	3,505	148.4	301,510	1,362,427	351.9
LORAL SPACE & COMMUNICATIONS.....			21,609	24,248	0.02	0.02	12.2	278	205	-26.3	53,693	49,836	-7.2
			26,254	56,800	0.05	0.05		1,133	3,300		247,817	1,312,591	
General services													
Other (noncomputer) bus. serv (advertising, equip. rental, etc.)			180,118	207,689	0.19	0.19	15.3	1,232,349	905,843	-26.5	68,547,624	60,376,709	-11.9
CELLNET DATA SYSTEMS INC.....			25,394	52,582	0.05	0.05	107.1	543	1,620	198.3	1,669	76,449	4480.5
CMG INFORMATION SERVICES INC.....			25,394	27,524	0.02	0.02	8.4	543	708	30.4	1,669	5,842	250.0
				25,058	0.02	0.02			912			70,607	
Transportation; freight & warehousing; & pipeline services			55,500	68,000	0.06	0.06	22.5	885,871	892,873	0.8	56,402,000	58,216,000	3.2
UNITED STATES POSTAL SERVICE.....			55,500	68,000	0.06	0.06	22.5	885,871	892,873	0.8	56,402,000	58,216,000	3.2
Wholesale & retail trade			99,224	87,107	0.08	0.08	-12.2	345,935	11,350	-96.7	12,143,955	2,084,260	-82.8
CRANE CO.....			41,700	47,300	0.04	0.04	13.4	10,600	11,000	3.8	1,847,732	2,036,831	10.2
SCIOS INC.....			37,524	39,807	0.04	0.04	6.1	335	350	4.5	64,223	47,429	-26.1
			20,000					335,000			10,232,000		
Information & electronics													
Calculating/accounting mach. & office machines, nec			39,774,093	45,823,950	41.15	41.15	15.2	2,678,550	2,797,403	4.4	618,813,972	656,846,593	6.1
BELL & HOWELL COMPANY.....			206,063	210,468	0.19	0.19	2.1	42,315	43,869	3.7	6,257,579	6,650,241	6.3
DIEBOLD INC.....			38,101	38,321	0.03	0.03	0.6	6,110	5,704	-6.6	902,797	856,971	-5.1
PITNEY BOWES INC.....			41,797	45,184	0.04	0.04	8.1	5,980	6,714	12.3	1,030,191	1,226,936	19.1
TELXON CORP.....			81,726	89,463	0.08	0.08	9.5	28,625	29,901	4.5	3,858,579	4,100,464	6.3
			44,439	37,500	0.03	0.03	-15.6	1,600	1,550	-3.1	466,012	465,870	0.0

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

	Sales															
	R&D					Employment					Sales					
	1997		1996		1997		1996		1997		1996		1997		1996-97	
Major & detailed industrial sector/top 500 corporations ¹		In thousands of dollars		As a percent of the total 500 in 1997		Percent change from 1996-97		Number of employees		Percent change from 1996-97		In thousands of dollars		Percent change from 1996-97		
Communications serv. (phone, satellite, radio/TV, cable, etc.)																
AT&T CORP.....	1,182,833	1,053,727	0.95	-10.9	302,156	244,448	-19.1	87,070,125	74,768,322	-14.1						
GEOTEK COMMUNICATIONS.....	822,000	829,000	0.74	0.9	130,400	127,800	-2.0	52,184,000	51,319,000	-1.7						
GTE CORP.....	37,528	39,609	0.04	5.5	800	685	-14.4	92,794	65,510	-29.4						
OMNIPONT CORP.....	122,000	122,000	0.11	0.0	102,000	114,000	11.8	21,339,000	23,260,000	9.0						
SMARTALK TELESERVICES INC.....	38,205	23,932	0.02	-37.4	856	1,423	66.2	531	51,950	9683.4						
	163,100	39,186	0.04		68,100	540			71,862							
Computer integrated systems design																
CERNER CORP.....	364,923	431,256	0.39	18.2	21,546	33,090	53.6	3,483,351	5,706,732	63.8						
HBO & CO.....	29,893	36,151	0.03	20.9	NA	2,050	NA	189,107	245,057	29.6						
INTERGRAPH CORP.....	64,096	96,759	0.09	51.0	4,404	6,286	42.7	796,578	1,203,204	51.0						
MENTOR GRAPHICS CORP.....	103,397	98,073	0.09	-5.1	8,200	7,700	-6.1	1,095,333	1,124,305	2.6						
SABRE GROUP HLDGS INC -CL A.....	72,886	112,227	0.10	54.0	2,500	2,570	2.8	447,886	454,727	1.5						
SHARED MEDICAL SYS CORP.....	54,665	64,046	0.02	17.2	5,420	5,984	10.4	767,135	895,892	16.8						
	39,986		0.06		1,022			187,312								
Computer networking communications equip																
3COM CORP.....	1,882,810	2,620,503	2.35	39.2	36,212	42,863	18.4	15,756,577	20,849,561	32.3						
ADAPTEC INC.....	335,266	581,613	0.52	73.5	7,109	12,920	81.7	3,147,106	5,420,367	72.2						
ASCEND COMMUNICATIONS INC.....	128,530	172,522	0.15	34.2	2,794	3,276	17.3	933,868	1,007,293	7.9						
AUSPEX SYSTEMS INC.....	40,291	155,986	0.14	287.1	721	1,644	128.0	549,297	1,167,352	112.5						
BAY NETWORKS INC.....	213,534	31,803	0.03	26.3	NA	619	NA	202,486	2093,060	1.8						
CABLETRON SYSTEMS.....	161,674	269,800	0.24	12.4	6,607	6,887	4.2	2,056,634	2,093,060	-2.1						
CIRRUS LOGIC INC.....	230,786	181,777	0.16	-22.2	2,557	NA	NA	1,406,552	1,377,330	4.0						
CISCO SYSTEMS INC.....	399,291	179,552	0.16	74.9	8,782	11,000	25.3	4,096,007	6,440,171	57.2						
DIALOGIC CORP.....	40,666	698,169	0.63	26.7	905	994	9.8	213,604	261,310	22.3						
ELECTRONICS FOR IMAGING INC.....	22,440	40,318	0.04	79.7	354	538	52.0	298,013	360,631	21.0						

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

	Major & detailed industrial sector/top 500 corporations ¹											
	R&D					Employment					Sales	
	In thousands of dollars		As a percent of the total 500 in 1997	Percent change from 1996-97	Number of employees		Percent change from 1996-97	In thousands of dollars		Percent change from 1996-97		
1997	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997		
Computer networking communications equip—continued												
FORE SYSTEMS INC.....	55,217	66,779	0.06	20.9	1,361	1,592	17.0	395,347	458,369	15.9		
NETWORK EQUIPMENT TECH INC.....	43,354	43,442	0.04	0.2	1,367	1,408	3.0	324,438	308,721	-4.8		
S3 INCORPORATED.....	63,382	95,792	0.09	51.1	636	654	2.8	439,243	436,359	-0.7		
SHIVA CORP.....	23,982	25,545	0.02	6.5	670	610	-9.0	201,837	150,993	-25.2		
XYLAN INC.....		25,875	0.02			721			210,849			
CASCADE COMMUNICATIONS CORP.....	53,378				833			340,976				
DIGI INTERNATIONAL INC.....	20,624				698			195,833				
NETWORK GENERAL CORP.....	50,395				818			240,668				
Computer peripheral equip. (printers, scanners, etc.)												
CALCOMP TECHNOLOGY INC.....	20,713	325,349	0.02	12.6	1,025	885	-13.7	235,916	200,158	-15.2		
C-CUBE MICROSYSTEMS INC.....	44,177	64,204	0.06	45.3	669	750	12.1	319,758	337,012	5.4		
DIAMOND MULTIMEDIA SYS INC.....		24,886	0.02			864			443,281			
LEXMARK INTL GRP INC -CL A.....	123,900	128,900	0.12	4.0	6,573	7,985	21.5	2,377,600	2,493,500	4.9		
LOGITECH INTL S A -ADR.....	26,481	27,774	0.02	4.9	2,995	NA	NA	413,716	390,227	-5.7		
SECURITY DYNAMICS TECH INC.....		26,280	0.02			610			135,930			
SYMBOL TECHNOLOGIES.....	30,905	29,991	0.03	-3.0	2,900	3,200	10.3	656,675	774,345	17.9		
Computer storage devices												
DATA GENERAL CORP.....	98,022	109,984	0.10	12.2	4,900	5,100	4.1	1,322,250	1,533,169	16.0		
DIGITAL EQUIPMENT.....	1,062,253	1,014,044	0.91	-4.5	59,100	54,900	-7.1	14,562,775	13,046,832	-10.4		
EMC CORP/MA.....	161,088	220,884	0.20	37.1	4,800	6,400	33.3	2,273,652	2,937,860	29.2		
EXABYTE CORP.....	38,391	40,909	0.04	6.6	1,493	1,229	-17.7	362,891	335,684	-7.5		
IOMEGA CORP.....	42,101	78,026	0.07	85.3	2,926	4,816	64.6	1,212,769	1,739,972	43.5		
QUANTUM CORP.....	291,332	321,741	0.29	10.4	6,380	6,219	-2.5	5,319,457	5,805,235	9.1		
SEAGATE TECHNOLOGY.....	420,429	462,206	0.42	9.9	87,000	111,000	27.6	8,588,350	8,940,022	4.1		

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

	Major & detailed industrial sector/top 500 corporations ¹											
	R&D					Employment					Sales	
	In thousands of dollars		As a percent of the total 500 in 1997	Percent change from 1996-97	Number of employees		Percent change from 1996-97	In thousands of dollars		Percent change from 1996-97		
1997	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997		
Computer storage devices—continued												
STORAGE TECH CP -CL A.....	176,422	209,526	0.19	18.8	8,300	8,300	0.0	2,039,550	2,144,656	5.2		
WESTERN DIGITAL CORP.....	150,112	150,157	0.13	0.0	9,628	13,384	39.0	2,865,219	4,177,857	45.8		
SYQUEST TECHNOLOGY INC.....	25,920				1,904			200,407				
Electronic components (semiconductors coil, etc.)												
ACTEL CORP.....	5,668,425	6,648,235	5.97	17.3	321,588	340,356	5.8	66,209,820	72,429,514	9.4		
ADVANCED MICRO DEVICES.....	23,934	26,465	0.02	10.6	356	380	6.7	148,779	155,858	4.8		
ALTERA CORP.....	400,703	467,877	0.42	16.8	12,200	12,800	4.9	1,953,019	2,356,375	20.7		
AMP INC.....	49,513	54,417	0.05	9.9	918	1,086	18.3	497,306	631,114	26.9		
ANALOG DEVICES.....	315,100	319,600	0.29	1.4	44,985	46,526	3.4	5,468,028	5,745,235	5.1		
APPLIED MAGNETICS CORP.....	177,772	196,148	0.18	10.3	6,900	7,500	8.7	1,193,786	1,243,494	4.2		
ARTESYN TECHNOLOGIES INC.....	50,867	52,532	0.05	3.3	6,401	8,431	31.7	344,754	494,839	43.5		
ATMEL CORP.....	110,239	122,896	0.03	11.5	3,914	4,589	17.2	1,070,288	958,282	-10.5		
BERG ELECTRONICS CORP.....	26,100	28,400	0.03	8.8	6,000	7,000	16.7	704,669	785,150	11.4		
BURR-BROWN CORP.....	28,452	33,951	0.03	19.3	1,311	1,308	-0.2	219,997	252,102	14.6		
CHIPS & TECHNOLOGIES INC.....	19,837	23,665	0.02	19.3	209	260	24.4	150,788	168,334	11.6		
CYPRESS SEMICONDUCTOR CORP.....	84,334	93,842	0.08	11.3	2,171	2,770	27.6	528,385	539,856	2.2		
DALLAS SEMICONDUCTOR CORP.....	34,974	46,078	0.04	31.7	1,348	1,497	11.1	288,354	368,212	27.7		
ESS TECHNOLOGY INC.....	20,269	29,471	0.03	45.4	253	447	76.7	226,455	249,517	10.2		
INTEGRATED CIRCUIT SYSTEMS.....		24,717	0.02			177			103,759			
INTEGRATED SILICON SOLUTION.....	21,350	26,179	0.02	22.6	380	476	25.3	132,039	108,261	-18.0		
INTEL CORP.....	1,808,000	2,347,000	2.11	29.8	48,500	63,700	31.3	20,847,000	25,070,000	20.3		
INTL RECTIFIER CORP.....	26,967	35,495	0.03	31.6	3,915	4,385	12.0	576,849	486,127	-15.7		
KEMET CORP.....	20,755	23,766	0.02	14.5	10,718	11,300	5.4	555,319	667,721	20.2		
LEVEL ONE COMMUNICATIONS INC.....												
LINEAR TECHNOLOGY CORP.....	24,505	30,398	0.03	24.0	410	559	36.3	111,987	156,262	39.5		
LSI LOGIC CORP.....	31,058	35,401	0.03	14.0	1,650	1,084	-34.3	377,771	379,251	0.4		
LSI LOGIC CORP.....	184,452	229,069	0.21	24.2	3,912	4,443	13.6	1,238,694	1,290,275	4.2		

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

	1997		1996		R&D			Employment			Sales	
	Major & detailed industrial sector/top 500 corporations ¹		1996		In thousands of dollars	As a percent of the total 500 in 1997	Percent change from 1996-97	Number of employees		Percent change from 1996-97	In thousands of dollars	
			1996	1997	1996	1997	1996	1997	1996	1997	1996	1997
Electronic components (semiconductors coils, etc.)—continued												
MAXIM INTEGRATED PRODUCTS.....			47,532	51,264	0.05	7.9	1,574	1,998	26.9	421,626	433,710	2.9
MEMC ELECTRONIC MATERIALS INC.....			44,313	64,457	0.06	45.5	7,100	7,700	8.5	1,119,500	986,673	-11.9
			33,648	38,362	0.03	14.0	1,879	2,153	14.6	334,252	394,894	18.7
MICROCHIP TECHNOLOGY INC.....			191,900	208,900	0.19	8.9	9,900	12,200	23.2	3,653,800	3,515,500	-3.8
MICRON TECHNOLOGY INC.....			78,745	83,843	0.08	6.5	10,100	11,947	18.3	1,382,673	1,539,712	11.4
MOLEX INC.....			372,100	482,000	0.43	29.5	12,400	13,000	4.8	2,507,300	2,536,700	1.2
NATL SEMICONDUCTOR CORP.....			35,555	34,660	0.03	-2.5	410	430	4.9	247,984	167,395	-32.5
OAK TECHNOLOGY INC.....			52,221	64,995	0.06	24.5	19,507	23,107	18.5	991,118	1,162,050	17.2
READ-RITE CORP.....			33,556	36,569	0.03	9.0	15,524	18,470	19.0	4,544,759	5,762,656	26.8
SCI SYSTEMS INC.....			989,000	1,075,000	0.97	8.7	59,927	44,140	-26.3	9,940,000	9,750,000	-1.9
TEXAS INSTRUMENTS INC.....			47,229	51,896	0.05	9.9	14,700	16,400	11.6	1,987,545	2,114,718	6.4
THOMAS & BETTS CORP.....			105,185	98,434	0.09	-6.4	2,948	2,483	-15.8	716,770	712,653	-0.6
VLSI TECHNOLOGY INC.....			71,075	80,456	0.07	13.2	1,277	1,391	8.9	568,143	613,593	8.0
XILINX INC.....			32,371	391			391			183,825		
CYRIX CORP.....			27,651	5,479			5,479			353,186		
HUTCHINSON TECH.....			20,823	1,228			1,228			268,934		
SILICONIX INC.....			26,340	793			793			354,138		
STANDARD MICROSYS CORP.....												
Electronic computers & computer terminals			10,077,693	11,093,953	9.96	10.1	508,192	558,862	10.0	176,569,828	192,432,594	9.0
APPLE COMPUTER INC.....			604,000	485,000	0.44	-19.7	13,398	10,176	-24.0	9,833,000	7,081,000	-28.0
COMPAQ COMPUTER CORP.....			407,000	817,000	0.73	100.7	18,863	32,565	72.6	18,109,000	24,584,000	35.8
DELL COMPUTER CORP.....			88,000	145,000	0.13	64.8	10,350	16,000	54.6	7,759,000	12,327,000	58.9
ENCORE COMPUTER CORP.....			30,260	23,953	0.02	-20.8	694	121	-82.6	47,627	29,486	-38.1
HEWLETT-PACKARD CO.....			2,718,000	3,078,000	2.76	13.2	112,000	121,900	8.8	38,420,000	42,895,000	11.6
INTL BUSINESS MACHINES CORP.....			3,934,000	4,307,000	3.87	9.5	240,615	269,465	12.0	75,947,000	78,508,000	3.4
NCR CORP.....			444,000	447,000	0.40	0.7	38,600	38,300	-0.8	6,963,000	6,589,000	-5.4

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

	1997		1996		R&D			Employment			Sales		
	Major & detailed industrial sector/top 500 corporations ¹		1996		In thousands of dollars	As a percent of the total 500 in 1997	Percent change from 1996-97	Number of employees	Percent change from 1996-97	In thousands of dollars	Percent change from 1996-97		
			1996	1997	1996	1997	1996	1997	1996	1997	1996	1997	
Electronic computers & computer terminals—continued													
SEQUENT COMPUTER SYS INC.....			73,717	92,984	0.08	0.08	26.1	2,656	2,818	6.1	595,362	833,886	40.1
SILICON GRAPHICS INC.....			353,461	479,101	0.43	0.43	35.5	10,485	10,930	4.2	2,921,316	3,662,601	25.4
STRATUS COMPUTER INC.....			79,818	90,647	0.08	0.08	13.6	2,293	2,487	8.5	609,329	688,275	13.0
SUN MICROSYSTEMS INC.....			657,144	825,968	0.74	0.74	25.7	17,400	21,500	23.6	7,094,751	8,598,346	21.2
UNISYS CORP.....			342,900	302,300	0.27	0.27	-11.8	32,900	32,600	-0.9	6,370,500	6,636,000	4.2
TANDEM COMPUTERS INC.....			345,393					7,938			1,899,943		
Household audio & video equipment, & audio recordings													
GENERAL MOTORS CL H.....			835,871	229,751	0.21	0.21	-72.5	110,269	34,784	-68.5	18,420,195	7,801,494	-57.6
HARMAN INTERNATIONAL INDS.....			730,000	120,400	0.11	0.11	-83.5	86,000	15,000	-82.6	15,744,100	5,128,300	-67.4
ZENITH ELECTRONICS CORP.....			59,171	66,451	0.06	0.06	12.3	8,369	8,384	0.2	1,361,595	1,474,094	8.3
Laboratory controlling & measuring instruments													
ANALOGIC CORP.....			1,993,705	2,423,390	2.18	2.18	21.6	221,193	257,279	16.3	34,187,521	37,567,392	9.9
BECKMAN COULTER INC.....			31,342	37,063	0.03	0.03	18.3	1,500	1,500	0.0	224,309	251,141	12.0
BIO-RAD LABS -CL A.....			108,400	123,600	0.11	0.11	14.0	6,079	11,171	83.8	1,028,000	1,198,000	16.5
COHERENT INC.....			39,580	46,138	0.04	0.04	16.6	2,535	2,650	4.5	418,789	426,914	1.9
CREDENCE SYSTEMS CORP.....			37,705	48,721	0.04	0.04	29.2	1,794	2,131	18.8	364,430	391,038	7.3
EMERSON ELECTRIC CO.....			35,422	43,372	0.04	0.04	22.4	575	646	12.3	238,788	204,092	-14.5
HONEYWELL INC.....			398,700	445,100	0.40	0.40	11.6	86,400	100,700	16.6	11,149,900	12,298,600	10.3
KLA-TENCOR CORP.....			353,300	446,600	0.40	0.40	26.4	53,000	57,500	8.5	7,311,600	8,027,500	9.8
LTX CORP.....			52,800	134,105	0.12	0.12	154.0	2,500	3,600	44.0	694,867	1,031,824	48.5
MILLIPORE CORP.....			22,927	23,350	0.02	0.02	1.8	1,032	950	-7.9	266,476	194,343	-27.1
PERKIN-ELMER CORP.....			38,429	56,299	0.05	0.05	46.5	3,482	4,754	36.5	618,735	758,919	22.7
QUICKTURN DESIGN SYSTEMS INC.....			102,331	132,461	0.12	0.12	29.4	5,697	5,685	-0.2	1,162,949	1,276,766	9.8
ROBOTIC VISION SYSTEMS INC.....			23,499	23,410	0.02	0.02		382	800		110,404	152,103	

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

	Major & detailed industrial sector/top 500 corporations ¹											
	1997		1996		R&D			Employment			Sales	
	In thousands of dollars	As a percent of the total 500 in 1997	Percent change from 1996-97	Number of employees	Percent change from 1996-97	In thousands of dollars	Percent change from 1996-97	In thousands of dollars	Percent change from 1996-97			
Laboratory controlling & measuring instruments—continued												
SEPRACOR INC.....	35,828	0.04	20.2	128	149	15,041	16.4	15,337	2.0			
SNAP-ON INC.....	42,400	0.04	9.7	10,600	11,700	1,549,548	10.4	1,744,106	12.6			
TERADYNE INC.....	143,931	0.15	12.9	5,000	6,300	1,171,615	26.0	1,266,274	8.1			
THERMO ELECTRON CORP.....	154,448	0.17	24.1	17,760	22,400	2,932,558	26.1	3,558,320	21.3			
THERMO INSTRUMENT SYSTEMS.....	80,591	0.10	33.5	6,870	9,398	1,209,362	36.8	1,592,314	31.7			
THERMO OPTEK CORP.....	21,979	0.03	27.7	2,065	2,341	350,639	13.4	466,935	33.2			
THERMOQUEST CORP.....	21,821	0.03	29.0	1,270	2,090	313,793	64.6	438,863	39.9			
TRIMBLE NAVIGATION LTD.....	36,705	0.04	10.8	1,094	1,292	233,660	18.1	272,305	16.5			
VARIAN ASSOCIATES INC.....	110,140	0.10	0.6	6,700	6,500	1,599,361	-3.0	1,425,824	-10.9			
WATERS CORP.....	40,198	0.07	100.9	1,865	2,640	391,113	41.6	465,470	19.0			
COGNEX CORP.....	19,434			404		122,843						
MEASUREX CORP.....	21,036			2,843		415,975						
TENCOR INSTRUMENTS.....	44,258			NA		403,170						
Modems & other wired telephone equipment												
ASPECT TELECOMMUNICATIONS.....	2,732,411	3.60	46.8	156,116	167,125	23,960,981	7.1	33,740,146	40.8			
ADC TELECOMMUNICATIONS INC.....	90,038	0.11	36.2	4,620	5,924	828,009	28.2	1,164,450	40.6			
ADTRAN INC.....	24,647	0.03	21.9	894	1,011	250,121	13.1	265,335	6.1			
ADVANCED FIBRE COMM INC.....	25,726	0.02			660			267,858				
ASPECT TELECOMMUNICATIONS.....	34,585	0.04	32.2	1,330	1,610	308,703	21.1	390,642	26.5			
BROADBAND TECHNOLOGIES INC.....	22,785	0.03	23.2	333	300	23,144	-9.9	15,012	-35.1			
CIENA CORP.....	23,308	0.02			841			373,827				
COMVERSE TECHNOLOGY INC.....	27,441	0.03	40.9	1,243	2,827	197,181	127.4	280,281	42.1			
DSC COMMUNICATIONS CORP.....	210,091	0.23	20.0	6,367	6,681	1,380,891	4.9	1,575,479	14.1			
GENERAL DATA COMM INDS.....	34,121	0.04	19.8	1,849	1,727	235,129	-6.6	207,766	-11.6			
LUCENT TECHNOLOGIES INC.....	1,838,000	2.78	68.7	124,000	134,000	15,859,000	8.1	26,360,000	66.2			
PAIRGAIN TECHNOLOGIES INC.....	31,982	0.03			640			282,325				
PICTURETEL CORP.....	60,089	0.07	32.3	1,496	1,544	482,532	3.2	466,425	-3.3			

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

	Sales														
	R&D					Employment					Sales				
	In thousands of dollars		As a percent of the total 500 in 1997	Percent change from 1996-97	Number of employees		Percent change from 1996-97	In thousands of dollars		Percent change from 1996-97					
1997	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997					
Major & detailed industrial sector/top 500 corporations ¹															
Modems & other wired telephone equipment—															
continued															
RELTEC CORP.....	37,400	33,600	0.03	-10.2	NA	5,273	NA	689,400	887,200	28.7					
TELLABS INC.....	107,216	158,129	0.14	47.5	3,418	4,087	19.6	868,975	1,203,546	38.5					
BOSTON TECHNOLOGY INC.....	38,787				904			192,458							
CENTIGRAM COMMUNI-															
CATIONS CP.....	20,154				449			104,324							
OCTEL COMMUNICATIONS CORP...	77,620				2,900			563,602							
U.S. ROBOTICS CORP.....	109,437				6,313			1,977,512							
Multiple and miscellaneous computer & data processing services															
AMERICA ONLINE INC.....	515,211	540,442	0.49	4.9	42,470	42,567	0.2	6,345,929	6,885,293	8.5					
AUTOMATIC DATA PROCESSING.....	70,798	58,208	0.05	-17.8	5,828	7,371	26.5	1,093,854	1,685,228	54.1					
BARRA INC.....	249,635	296,544	0.27	18.8	29,000	30,000	3.4	3,566,597	4,112,186	15.3					
INCYTE PHARMACEUTICALS INC.....	40,864	28,914	0.03			696			137,377						
SUNGARD DATA SYSTEMS INC.....	105,974	68,927	0.06	68.7	NA	NA	NA	41,785	88,351	111.4					
COMPUERVE CORP.....	27,734	87,849	0.08	-17.1	3,700	4,500	21.6	670,309	862,151	28.6					
CSG SYSTEMS INTL INC.....	20,206				3,050			841,087							
					892			132,297							
Ophthalmic goods, photograph. equip. & clocks															
AVID TECHNOLOGY INC.....	2,546,710	2,616,313	2.35	2.7	216,101	223,806	3.6	40,448,717	39,586,587	-2.1					
BAUSCH & LOMB INC.....	72,590	74,363	0.07	2.4	1,663	1,599	-3.8	429,009	471,338	9.9					
EASTMAN KODAK CO.....	75,500	67,500	0.06	-10.6	13,000	13,000	0.0	1,926,800	1,915,700	-0.6					
IMATION CORP.....	1,028,000	1,047,700	0.94	1.9	94,800	97,500	2.8	15,968,000	14,538,000	-9.0					
POLAROID CORP.....	183,100	194,900	0.18	6.4	9,400	9,800	4.3	2,278,200	2,201,800	-3.4					
ULTRATECH STEPPER INC.....	116,300	122,800	0.11	5.6	9,996	9,931	-0.7	2,275,200	2,146,400	-5.7					
XEROX CORP.....	27,220	30,050	0.03	10.4	542	576	6.3	193,508	147,349	-23.9					
	1,044,000	1,079,000	0.97	3.4	86,700	91,400	5.4	17,378,000	18,166,000	4.5					
Prepackaged software															
ACCLAIM ENMNT INC.....	5,266,971	6,619,062	5.94	25.7	136,782	160,331	17.2	34,517,217	44,120,965	27.8					
ACTIVISION INC.....	34,582	30,824	0.03	-10.9	930	680	-26.9	252,469	165,411	-34.5					
	28,393		0.03		667			259,926							

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

	R&D										Employment				Sales	
	1997		1996		As a percent of the total 500 in 1997	Percent change from 1996-97	Number of employees		Percent change from 1996-97	In thousands of dollars		Percent change from 1996-97				
							1996	1997		1996	1997					
Prepackaged software—continued																
ADOBE SYSTEMS INC.....			174,165	176,831	0.16	1.5	2,222	2,654	19.4	786,563	911,894	15.9				
ASPEN TECHNOLOGY INC.....			20,208	31,153	0.03	54.2	1,040	1,239	19.1	103,609	180,299	74.0				
AUTODESK INC.....			93,740	122,419	0.11	30.6	2,044	2,470	20.8	509,630	632,358	24.1				
AVANT CORP.....			20,696	29,559	0.03	42.8	444	701	57.9	106,087	147,348	38.9				
BAAN COMPANY NV.....			42,136	90,849	0.08	115.6	2,389	4,254	78.1	387,958	679,596	75.2				
BEA SYSTEMS INC.....			80,431	43,008	0.04	-46.5	459	800	74.3	61,598	157,189	155.2				
BMC SOFTWARE INC.....			77,459	94,923	0.09	22.5	1,813	2,770	52.8	563,210	730,634	29.7				
BOOLE & BABBAGE INC.....				25,881	0.02			880			197,097					
BRODERBUND SOFTWARE INC.....			37,613	67,767	0.06	80.2	638	1,129	77.0	186,207	190,787	2.5				
CADENCE DESIGN SYS INC.....			211,011	146,946	0.13	-30.4	3,190	3,945	23.7	741,459	915,893	23.5				
CHEKFREE HOLDINGS CORP.....				172,869	0.16			1,444			176,445					
COMPUTER ASSOC INTL INC.....			437,000	369,000	0.33	-15.6	9,850	NA	NA	4,040,000	4,719,000	16.8				
COMPUWARE CORP.....			66,284	57,576	0.05	-13.1	6,609	8,663	31.1	812,896	1,139,318	40.2				
EDWARDS J D & CO.....			40,321	60,591	0.05	50.3	NA	3,577	NA	478,048	647,812	35.5				
ELECTRONIC ARTS INC.....			118,103	146,199	0.13	23.8	1,700	2,100	23.5	624,766	908,852	45.5				
FILENET CORP.....			36,502	39,575	0.04	8.4	1,443	1,490	3.3	268,913	251,425	-6.5				
FTP SOFTWARE INC.....			31,268	27,044	0.02	-13.5	804	350	-56.5	101,091	67,734	-33.0				
HARBINGER CORP.....				29,196	0.03			1,032			120,675					
HYPERION SOFTWARE CORP.....			28,839	33,046	0.03	14.6	1,038	1,226	18.1	172,824	222,830	28.9				
I2 TECHNOLOGIES INC.....				48,720	0.04			1,006			200,706					
IDX SYSTEMS CORP.....			23,974	38,602	0.03	61.0	1,248	1,883	50.9	157,579	251,417	59.5				
INDUS INTERNATIONAL INC.....				27,664	0.02			896			177,034					
INFINIUM SOFTWARE INC.....				23,460	0.02			549			87,001					
INFORMIX CORP.....			120,211	146,310	0.13	21.7	4,491	3,489	-22.3	727,849	662,298	-9.0				
INSO CORP.....				28,760	0.03			439			81,869					
INTERSOLV.....				24,231	0.02			1,073			196,480					
INTUIT INC.....			83,601	104,027	0.09	24.4	3,474	3,000	-13.6	538,608	598,925	11.2				
MANUISTICS GROUP INC.....				31,665	0.03						175,666					

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

	R&D				Employment		Sales		Percent change from 1996-97
	In thousands of dollars		As a percent of the total 500 in 1997	Number of employees		In thousands of dollars			
	1996	1997		1996	1997	1996	1997		
Prepackaged software—continued									
MARCAM SOLUTIONS INC.....	27,680	34,301	0.03	NA	701	201,424	163,880	-18.6	
MICROPROSE INC.....	23,145	29,038	0.03	390	385	100,253	60,009	-40.1	
MICROSOFT CORP.....	1,432,000	1,925,000	1.73	20,561	22,232	8,671,000	11,358,000	31.0	
MIDWAY GAMES INC.....	32,495	55,941	0.05	326	400	245,423	388,226	58.2	
NATIONAL INSTRUMENTS CORP.....	24,387	30,296	0.03	1,142	1,465	200,715	240,879	20.0	
NETMANAGE INC.....	41,322	41,313	0.04	632	440	104,596	61,524	-41.2	
NETSCAPE COMMUNICATIONS CORP.....	83,900	129,900	0.12	1,811	2,310	346,195	533,851	54.2	
NETWORKS ASSOCIATES INC.....	32,091	85,021	0.08	481	1,600	181,126	612,193	238.0	
NOVELL INC.....	275,627	282,680	0.25	5,870	4,770	1,374,856	1,007,311	-26.7	
ON TECHNOLOGY CORP.....	22,741	28,359	0.03	288	142	51,792	41,282	-20.3	
OPEN MARKET INC.....	555,476	719,143	0.65	29,431	36,802	5,684,336	7,143,866	25.7	
ORACLE CORP.....	39,476	53,236	0.05	2,774	3,432	600,122	808,796	34.8	
PARAMETRIC TECH CORP.....	129,553	129,553	0.12	4,452	4,452	815,651	815,651		
PEOPLESOFT INC.....	20,628	26,349	0.02	490	572	72,136	82,129	13.9	
PHOENIX TECHNOLOGIES LTD.....	23,951	37,797	0.03	1,108	1,090	176,690	188,314	6.6	
PROGRESS SOFTWARE CORP.....	25,623	29,317	0.03	700	917	126,444	172,234	36.2	
QAD INC.....	24,445	61,560	0.06	845	1,743	145,373	310,670	113.7	
RATIONAL SOFTWARE CORP.....	74,968	46,130	0.04	1,188	1,082	207,890	193,660	-6.8	
SANTA CRUZ OPERATION INC.....	20,921	24,853	0.02	2,600	1,700	439,171	350,597	11.3	
STERLING COMMERCE INC.....	30,719	23,114	0.02	1,637	3,100	285,256	488,978	23.2	
STERLING SOFTWARE INC.....	164,676	49,407	0.04	5,484	2,067	1,011,545	351,322	-10.6	
STRUCTURAL DYNAMICS RESEARCH.....	91,974	138,590	0.12	2,000	5,216	472,183	903,937	22.5	
SYBASE INC.....	85,373	91,332	0.08	1,716	2,300	353,500	578,361	41.2	
SYMANTEC CORP.....	54,400	116,059	0.10	2,200	1,961	340,800	499,145	26.3	
SYNOPSYS INC.....	25,140	51,700	0.05	2,038	2,400	263,214	430,500	26.3	
SYSTEM SOFTWARE ASSOC INC.....	30,034	30,034	0.03	2,067	2,067	121,125	299,346	13.7	
USCS INTL INC.....	25,219	25,219	0.02	579	579				
VERITAS SOFTWARE CO.....									

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

Major & detailed industrial sector/top 500 corporations ¹	R&D				Employment				Sales		
	1997	1996	In thousands of dollars	As a percent of the total 500 in 1997	Percent change from 1996-97	Number of employees		Percent change from 1996-97	In thousands of dollars		Percent change from 1996-97
						1996	1997		1996	1997	
Prepackaged software—continued		1996									
3DO COMPANY.....		42,077	3,625,457	3.26		238	215,681	5.4	92,350	41,264,513	7.6
7TH LEVEL INC.....		21,402	26,137	0.02		253	3,300	13.8	20,549	432,508	17.1
CHEYENNE SOFTWARE INC.....		31,465	207,826	0.19		778	7,350	-48.2	174,096	1,764,088	-34.4
COMPUTERVISION CORP.....		44,344	40,425	0.04		2,000	2,400	11.6	477,199	451,679	15.7
GENERAL MAGIC INC.....		23,227	174,900	0.16		180	29,000	5.1	5,917	3,791,200	4.9
PURE ATRIA CORP.....		22,794	2,748,000	2.47		659	150,000	7.9	132,495	29,794,000	6.5
VIEWLOGIC SYSTEMS INC.....		27,412	29,127	0.03		693	754		132,919	220,702	
WALL DATA INC.....		22,859	24,316	0.02		NA	7,800		139,364	1,348,703	
WONDERWARE CORP.....		20,089	235,922	0.21		443	9,000	50.0	64,924	2,096,365	157.6
			114,344	0.10			5,343	28.0		1,168,245	11.5
			24,460	0.02			734			191,023	
Radio, TV, cell phone, & satellite communication eq.											
ALLEN TELECOM INC.....		3,122,671	29,127	0.03		2,294	754		460,653	220,702	
GENERAL INSTRUMENT CORP.....		20,721	24,316	0.02		6,300	7,800		994,600	1,348,703	
GLENAYRE TECHNOLOGIES INC.....		209,257	235,922	0.21		158,400	9,000	50.0	813,850	2,096,365	157.6
HARRIS CORP.....		28,983	114,344	0.10		31,500	5,343	28.0	1,047,901	1,168,245	11.5
MOTOROLA INC.....		159,800	24,460	0.02		46,600	734			191,023	
P-COM INC.....		2,394,000	30,871			3,000			460,653		
PITTSBURGH CORP/IDE -CL A.....		162,340	21,400			75,300			994,600		
QUALCOMM INC.....		665,550	767,577	0.69		206,700	206,700	30.5	24,474,511	27,607,499	12.8
SCIENTIFIC-ATLANTA INC.....		95,299	70,122	0.06		31,500	31,500	-6.0	3,611,538	4,175,524	15.6
VTTEL CORP.....		255,000	256,000	0.23		52,000	52,000	11.6	8,071,000	9,153,000	13.4
		22,179	26,355	0.02		4,000	4,000	33.3	461,435	605,975	31.3
Search & navigation equipment			415,100	0.37				58.3		13,673,000	10.9
LITTON INDUSTRIES INC.....		65,100	767,577	0.69		158,400	206,700	15.3	24,474,511	27,607,499	12.8
NORTHROP GRUMMAN CORP.....		255,000	70,122	0.06		33,500	31,500	-6.0	3,611,538	4,175,524	15.6
ORBITAL SCIENCES CORP.....		22,179	26,355	0.02		4,000	4,000	33.3	461,435	605,975	31.3
RAYTHEON CO -CL B.....		323,271	415,100	0.37		75,300	119,200	58.3	12,330,538	13,673,000	10.9

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

Major & detailed industrial sector/top 500 corporations ¹	R&D				Employment				Sales			
	1997		1996		As a percent of the total 500 in 1997	Percent change from 1996-97	Number of employees		Percent change from 1996-97	In thousands of dollars		Percent change from 1996-97
	1997	1996	1996	1997			1996	1997		1996	1997	
Machinery & electrical equipment												
Electrical equipment (industrial & household)												
COOPER INDUSTRIES INC.....		6,387,141	7,038,500	6.32	10.2	1,063,117	1,162,838	9.4	229,905,228	247,446,687	7.6	
COOPER INDUSTRIES INC.....		3,000,095	3,070,656	2.76	2.4	519,786	532,873	2.5	121,703,964	126,878,992	4.3	
EATON CORP.....		57,300	60,900	0.05	6.3	42,400	41,200	-2.8	5,283,700	5,288,800	0.1	
EVANS & SUTHERLAND CMP CORP.....		267,000	319,000	0.29	19.5	54,000	49,000	-9.3	6,961,000	7,563,000	8.6	
GENERAL ELECTRIC CO.....		21,753	25,492	0.02	17.2	784	831	6.0	130,564	159,353	22.0	
GENERAL ELECTRIC CO.....		1,421,000	1,480,000	1.33	4.2	239,000	276,000	15.5	78,541,000	88,540,000	12.7	
GENERAL SIGNAL CORP.....		47,500	45,700	0.04	-3.8	13,000	9,900	-23.8	2,065,000	1,954,600	-5.3	
KOMAG INC.....		29,409	51,427	0.05	74.9	4,027	4,689	16.4	577,791	631,082	9.2	
MAGNETEK INC.....		21,500	23,600	0.02	9.8	13,000	13,800	6.2	1,161,625	1,190,540	2.5	
MAYTAG CORP.....		47,996	50,201	0.05	4.6	20,464	22,433	9.6	3,001,656	3,407,911	13.5	
RAYCHEM CORP.....		122,137	119,336	0.11	-2.3	8,697	8,650	-0.5	1,671,561	1,764,706	5.6	
ROCKWELL INTL CORP.....		691,000	714,000	0.64	3.3	58,639	45,000	-23.3	10,373,000	7,762,000	-25.2	
WHIRLPOOL CORP.....		197,000	181,000	0.16	-8.1	48,163	61,370	27.4	8,705,000	8,617,000	-1.0	
BALDOR ELECTRIC.....		19,900				3,645			502,875			
CHERRY CORP -CL A.....		22,200				4,367			439,592			
DURACELL INTERNATIONAL.....		34,400				9,600			2,289,600			
Machinery (indus., farm, services, mining & construction)												
AGCO CORP.....		3,387,046	3,967,844	3.56	17.1	543,331	629,965	15.9	108,201,264	120,567,695	11.4	
AGCO CORP.....		27,705	54,100	0.05	95.3	7,801	10,997	41.0	2,317,486	3,224,400	39.1	
AMERN STANDARD CO INC.....		81,000	112,000	0.10	38.3	44,000	51,000	15.9	5,804,561	6,007,509	3.5	
APPLIED MATERIALS INC.....		481,394	567,612	0.51	17.9	11,403	13,924	22.1	4,144,817	4,074,275	-1.7	
BAKER-HUGHES INC.....		44,019	59,500	0.05	35.2	16,800	21,250	26.5	3,027,730	3,685,400	21.7	
BLACK & DECKER CORP.....		101,300	99,100	0.09	-2.2	29,200	28,600	-2.1	4,914,400	4,940,500	0.5	
CAMCO INTERNATIONAL INC.....		26,267	33,160	0.03	26.2	4,570	5,500	20.4	672,732	913,841	35.8	
CASE CORP.....		193,000	196,000	0.18	1.6	17,500	18,300	4.6	5,409,000	6,024,000	11.4	
CATERPILLAR INC.....		410,000	528,000	0.47	28.8	57,026	59,863	5.0	16,522,000	18,925,000	14.5	
CINCINNATI MILACRON INC.....		49,000	50,100	0.04	2.2	12,598	12,751	1.2	1,729,700	1,896,700	9.7	

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

	1997		1996		R&D			Employment			Sales		Percent change from 1996-97
	Major & detailed industrial sector/top 500 corporations ¹		1996		In thousands of dollars	As a percent of the total 500 in 1997	Percent change from 1996-97	Number of employees		In thousands of dollars		Percent change from 1996-97	
			1997	1996				1996	1997	1996	1997		
Machinery (indus., farm, services, mining & construction)—continued													
CUMMINS ENGINE.....			250,000	235,000	0.22	6.4	23,500	26,300	11.9	5,257,000	5,625,000	7.0	
CYMER INC.....			24,971	370,300	0.02	11.3	33,919	809	1.4	203,647	12,636,400	14.0	
DEERE & CO.....			412,300	105,200	0.37	-7.3	6,200	6,500	4.8	1,962,900	2,163,900	10.2	
DETROIT DIESEL CORP.....			97,500	98,857	0.09	15.7	26,234	28,758	9.6	4,076,284	4,547,656	11.6	
DOVER CORP.....			114,392		0.10			902			240,914		
ETEC SYSTEMS INC.....			34,373	40,998	0.03	-3.1	1,412	1,357	-3.9	304,041	252,441	-17.0	
FSI INTL INC.....			39,713		0.04			915			181,530		
GENERAL SCANNING INC.....			32,902	34,471	0.03	16.3	17,100	17,700	3.5	2,887,570	3,118,243	8.0	
HARNISCHFEGER IND INC.....			40,094	55,800	0.04	-6.8	24,400	25,700	5.3	4,996,681	5,220,430	4.5	
ILLINOIS TOOL WORKS.....			52,021	209,300	0.05	3.0	41,874	46,567	11.2	6,647,900	7,103,300	6.9	
INGERSOLL-RAND CO.....			215,500	19,871	0.19	20.5	1,042	965	-7.4	184,500	144,688	-21.6	
INTEGRATED PROCESS EQ.....			23,951	20,585	0.02	17.1	7,260	7,550	4.0	1,079,963	1,156,343	7.1	
KENNAMETAL INC.....			24,105	50,404	0.02	-8.7	1,925	2,319	20.5	381,176	501,907	31.7	
KULICKE & SOFFA INDUSTRIES.....			46,030	173,013	0.04	-1.4	4,500	4,800	6.7	1,276,884	1,002,404	-21.5	
LAM RESEARCH CORP.....			170,624	27,000	0.15	3.3	11,800	13,400	13.6	2,273,200	2,246,900	-1.2	
NACCO INDUSTRIES -CL A.....			27,900	30,471	0.03	-2.2	3,823	4,024	5.3	609,444	636,710	4.5	
NORDSON CORP.....			29,812	53,902	0.03	66.7	1,143	1,776	55.4	461,736	534,004	15.7	
NOVELLUS SYSTEMS INC.....			89,876	47,514	0.08	13.1	7,700	8,500	10.4	960,376	1,062,008	10.6	
PALL CORP.....			53,747	39,000	0.05	17.9	16,300	17,200	5.5	2,267,600	2,406,800	6.1	
PREMARK INTERNATIONAL INC.....			46,000		0.04			928			169,465		
PRI AUTOMATION INC.....			24,634	66,974	0.02	10.3	3,072	3,389	10.3	639,928	594,957	-7.0	
SILICON VALLEY GROUP INC.....			73,901	24,600	0.07	-2.0	7,125	4,593	-35.5	1,109,422	922,316	-16.9	
SPX CORP.....			24,100	30,400	0.02	7.2	16,300	17,400	6.7	1,784,600	1,728,300	-3.2	
TECUMSEH PRODUCTS C -CL A.....			32,600	41,000	0.03	4.9	19,130	20,994	9.7	2,394,757	2,617,562	9.3	
THERMEDICS INC.....			24,270	31,343	0.02	16.7	3,280	3,908	19.1	930,909	1,051,204	12.9	
TIMKEN CO.....			43,000		0.04								
TORO CO.....			36,574		0.03								

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

	1997		1996		R&D			Employment			Sales		
	Major & detailed industrial sector/top 500 corporations ¹				In thousands of dollars	As a percent of the total 500 in 1997	Percent change from 1996-97	Number of employees		Percent change from 1996-97	In thousands of dollars		Percent change from 1996-97
			1996	1997				1996	1997		1996	1997	
Machinery (indus., farm, services, mining & construction)—continued													
TYCO INTERNATIONAL LTD.....			33,480	45,000	0.04	0.04	34.4	40,000	75,400	88.5	5,089,828	7,588,200	49.1
UNOVA INC.....			29,700	53,100	0.05	0.05	78.8	NA	7,060	NA	1,164,682	1,426,247	22.5
WATKINS-JOHNSON.....			56,675	54,682	0.05	0.05	-3.5	2,080	1,520	-26.9	438,319	291,271	-33.5
YORK INTL.....			28,000	30,600	0.03	0.03	9.3	20,100	20,270	0.8	3,218,534	3,193,657	-0.8
SEMITOOL INC.....			19,503					1,214			174,204		
			17,767,772	19,849,094	17.82	17.82	11.7	664,202	682,214	2.7	154,312,901	167,633,078	8.6
Medical substances & devices													
Drugs: biological products, except diagnostic substances													
AMGEN INC.....			1,231,684	1,504,594	1.35	1.35	22.2	12,411	15,235	22.8	3,501,925	4,106,957	17.3
AVIRON.....			528,300	630,800	0.57	0.57	19.4	4,646	5,308	14.2	2,239,800	2,401,000	7.2
BIODIN.....			132,384	24,254	0.02	0.02		675	NA		259,704	1,477	58.6
CELL GENESYS INC.....				145,501	0.13	0.13	9.9		797			411,909	
CENTOCOR INC.....			56,787	36,830	0.03	0.03		545	151		135,485	24,703	48.2
CREATIVE BIOMOLECULES INC.....				68,623	0.06	0.06	20.8		640			200,784	
CYTOTHERAPEUTICS INC.....				25,122	0.02	0.02			212			13,087	
GENZYME CORP.....			55,529	26,947	0.02	0.02			120			10,617	
GILEAD SCIENCES INC.....			41,881	74,200	0.07	0.07	33.6	3,516	3,500	-0.5	518,754	608,841	17.4
HYBRIDON INC.....			39,391	59,162	0.05	0.05	41.3	248	289	16.5	33,420	40,037	19.8
IDEC PHARMACEUTICALS CORP.....			26,763	46,828	0.04	0.04	18.9	206	78	-62.1	2,562	2,870	12.0
IMMUNE RESPONSE CORP/DE.....			27,211	32,407	0.03	0.03	21.1	268	339	26.5	30,009	35,340	17.8
IMMUNEX CORP.....			96,612	109,312	0.10	0.10	25.3	146	143	-2.1	7,000	2,000	-71.4
LIPOSOME COMPANY INC.....			29,371	28,894	0.03	0.03	-1.6	407	886	9.7	151,198	185,297	22.6
MEDIMMUNE INC.....			32,192	40,669	0.04	0.04	26.3	252	280	-31.2	56,068	60,783	8.4
NEUREX CORP.....			19,662	28,474	0.03	0.03	44.8	75	140	86.7	3,576	80,964	97.0
PATHOGENESIS CORP.....			20,673	28,018	0.03	0.03	35.5	115	159	38.3	440	442	0.5
SUGEN INC.....			29,792	34,585	0.03	0.03	16.1	160	189	18.1	13,650	6,031	-55.8

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

	1997		1996		R&D			Employment			Sales		
	Major & detailed industrial sector/top 500 corporations ¹				In thousands of dollars	As a percent of the total 500 in 1997	Percent change from 1996-97	Number of employees		Percent change from 1996-97	In thousands of dollars		Percent change from 1996-97
			1996	1997				1996	1997		1996	1997	
Drugs: biological products, except diagnostic substances—continued													
XOMA CORP.....			26,371	29,878	0.03	0.03	13.3	139	1,660	1,094.2	3,604	18,383	410.1
AUTOIMMUNE INC.....			24,187					72			NA		
MAGAININ PHARM INC.....			22,326					60			150		
TEXAS BIOTECHNOLOGY CORP.....			22,252					73			5,406		
Drugs: in vitro, in vivo diagnostic substances			542,086	592,959	0.53	0.53	9.4	19,033	15,606	-18.0	3,521,965	3,091,440	-12.2
ALLIANCE PHARMACEUTICAL CP.....			33,730	43,278	0.04	0.04	28.3	194	213	9.8	17,323	44,580	157.3
CHIRON CORP.....			267,303	296,455	0.27	0.27	10.9	7,434	6,482	-12.8	1,210,783	1,055,702	-12.8
CYTOGEN CORP.....			19,815	24,258	0.02	0.02	22.4	164	167	1.8	5,730	14,420	151.7
HUMAN GENOME SCIENCES INC.....			40,472	46,140	0.04	0.04	14.0	284	353	24.3	36,460	25,605	-29.8
MALLINCKRODT INC.....			116,200	108,000	0.10	0.10	-7.1	10,395	7,871	-24.3	2,210,200	1,861,200	-15.8
MILLENNIUM PHARMACTCLS INC.....			34,803	74,828	0.07	0.07	115.0	359	520	44.8	31,764	89,933	183.1
SEQUANA THERAPEUTICS INC.....			29,763					203			9,705		
Drugs: pharmaceutical preparations			14,105,088	15,733,395	14.13	14.13	11.5	499,680	514,369	2.9	125,973,138	137,359,581	9.0
ABBOTT LABORATORIES.....			1,204,841	1,302,403	1.17	1.17	8.1	52,817	54,487	3.2	11,013,460	11,883,462	7.9
AGOURON PHARM INC.....			71,010	108,137	0.10	0.10	52.3	374	708	89.3	55,955	132,063	136.0
ALLERGAN INC.....			118,300	131,200	0.12	0.12	10.9	6,124	6,112	-0.2	1,147,000	1,149,000	0.2
ALPHA BETA TECHNOLOGY INC.....			25,675	27,392	0.02	0.02	6.7	170	103	-39.4	138	81	-41.3
ALPHARMA INC -CL A.....			34,269	32,068	0.03	0.03	-6.4	2,550	2,600	2.0	486,184	500,288	2.9
ALTEON INC.....				23,264	0.02	0.02			47			NA	
ALZA CORP.....			26,800	30,600	0.03	0.03	14.2	1,652	1,532	-7.3	406,300	464,400	14.3
AMERICAN HOME PROD CORP.....			1,429,056	1,558,035	1.40	1.40	9.0	59,747	60,523	1.3	14,088,326	14,196,026	0.8
AMYLIN PHARMACEUTICALS INC.....			64,998	82,281	0.07	0.07	26.6	214	278	29.9	35,803	42,609	19.0
AXYS PHARMACEUTICALS INC.....			24,319	31,050	0.03	0.03	27.7	160	395	146.9	21,560	24,814	15.1
BRISTOL MYERS SQUIBB.....			1,276,000	1,385,000	1.24	1.24	8.5	51,200	53,600	4.7	15,065,000	16,701,000	10.9
CELL THERAPEUTICS INC.....				27,285	0.02	0.02			179			11,831	
CEPHALON INC.....			62,096	51,587	0.05	0.05	-16.9	303	282	-6.9	21,366	23,140	8.3

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

Major & detailed industrial sector/top 500 corporations ¹	R&D			Employment			Sales		
	In thousands of dollars		As a percent of the total in 1997	Number of employees		Percent change from 1996-97	In thousands of dollars		Percent change from 1996-97
	1996	1997	in 1997	1996	1997	1996	1997	1997	
Drugs: pharmaceutical preparations—continued									
COCENSYS INC.....		23,308	0.02		90		11,914		
COR THERAPEUTICS INC.....	50,617	47,831	0.04	177	182	2.8	18,755	22,190	18.3
GENENTECH INC.....	434,092	403,327	0.36	3,071	3,242	5.6	846,368	947,588	12.0
GENSIA SICOR INC.....	31,081	55,318	0.05	474	NA	NA	58,302	149,681	156.7
GUILFORD PHARMACEUTICAL INC.....		30,293	0.03		198		23,828		
ICOS CORPORATION.....	30,011	42,783	0.04	212	252	18.9	2,000	31,576	1478.8
INHALE THERAPEUTIC SYSTEMS.....		23,645	0.02		147		16,249		
INTERNEURON PHARM.....	26,408	53,909	0.05	139	171	23.0	22,497	67,863	201.7
ISIS PHARMACEUTICALS INC.....		24,940	0.02		338		32,470		
IVAX CORP.....	73,353	53,409	0.05	8,162	4,500	-44.9	1,151,307	602,110	-47.7
JOHNSON & JOHNSON.....	1,905,000	2,140,000	1.92	89,300	90,500	1.3	21,620,000	22,629,000	4.7
LILLY (ELI) & CO.....	1,189,500	1,382,000	1.24	29,200	31,100	6.5	7,346,600	8,517,600	15.9
MATRIX PHARMACEUTICAL INC.....	24,320	27,214	0.02	157	105	-33.1	NA	NA	NA
MERCK & CO.....	1,487,300	1,683,700	1.51	49,100	53,800	9.6	19,828,699	23,636,900	19.2
MYLAN LABORATORIES.....	42,633	46,278	0.04	1,750	1,946	11.2	440,192	555,423	26.2
NEXSTAR PHARMACEUTICALS.....	46,560	49,315	0.04	543	558	2.8	88,701	92,221	4.0
PFIZER INC.....	1,684,000	1,928,000	1.73	47,000	49,200	4.7	11,306,000	12,504,000	10.6
PHARMACIA & UPJOHN INC.....	1,266,000	1,217,000	1.09	31,700	30,000	-5.4	7,286,000	6,710,000	-7.9
REGENERON PHARMACEUT.....	28,269	27,770	0.02	243	270	11.1	19,754	26,858	36.0
SCHERER (R P)/DE.....	19,979	25,386	0.02	3,500	3,600	2.9	588,699	620,716	5.4
SCHERING-PLOUGH.....	722,800	847,000	0.76	20,600	22,700	10.2	5,655,800	6,778,000	19.8
SEQUIUS PHARMACEUTICALS INC.....	27,652	32,474	0.03	247	260	5.3	32,923	39,952	21.3
VERTEX PHARMACEUTICALS INC.....	35,212	51,624	0.05	181	223	23.2	13,341	29,926	124.3
VIMRX PHARMACEUTICALS INC.....	20,323	54,369	0.05	59	141	139.0		5,002	
WARNER-LAMBERT CO.....	554,800	672,200	0.60	38,000	40,000	5.3	7,231,400	8,179,800	13.1
CYGNUS INC.....	23,165			180			36,203		
GELTEX PHARMACEUTICALS INC.....	21,755			45			1,663		
LIGAND PHARMACEUTICAL -CL B.....	22,894			329			36,842		

See SOURCE at end of table

Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

Major & detailed industrial sector/top 500 corporations ¹	R&D			Employment			Sales		
	In thousands of dollars		As a percent of the total 500 in 1997	Number of employees		Percent change from 1996-97	In thousands of dollars		Percent change from 1996-97
	1996	1997		1996	1997		1996	1997	
Medical instruments									
ACUSON CORP.....	1,888,914	2,018,146	1.81	133,078	137,004	6.8	21,315,873	23,075,100	8.3
AFFYMETRIX INC.....	60,926	57,286	0.05	1,777	1,815	-6.0	346,155	437,762	26.5
ATL ULTRASOUND INC.....	53,969	28,168	0.03	2,703	242	10.6	419,157	19,765	2.9
BARD (C.R.) INC.....	77,300	59,710	0.05	9,800	2,669	11.0	1,194,400	431,244	1.6
BAXTER INTERNATIONAL INC.....	340,000	85,800	0.08	37,000	9,550	15.3	5,438,000	1,213,500	12.9
BECTON DICKINSON & CO.....	154,220	392,000	0.16	17,900	41,000	17.1	2,769,756	6,138,000	1.5
BOSTON SCIENTIFIC CORP.....	212,295	180,626	0.18	9,580	18,900	-7.4	1,462,043	2,810,523	28.1
DATASCOPE CORP.....	24,275	196,669	0.02	1,200	11,000	10.5	211,300	1,872,282	6.8
DEPUY INC.....	21,693	26,815	0.03	2,926	1,200	31.0	697,273	225,600	10.5
GUIDANT CORP.....	152,500	28,419	0.19	4,449	3,217	36.6	1,048,500	770,188	26.7
INCONTROL INC.....	23,112	208,300	0.02	169	6,017	7.9	306	1,328,200	545.8
MARQUETTE MEDICAL SYS.....	48,106	24,927	0.05	3,150	223	9.3	543,317	1,976	6.4
MEDTRONIC INC.....	280,214	52,594	0.27	13,719	3,125	6.1	2,438,224	578,260	6.8
SPACELABS MED INC.....	37,090	297,177	0.06	1,374	13,954	76.8	247,953	2,604,819	7.0
ST JUDE MEDICAL INC.....	74,841	65,581	0.09	3,620	1,600	39.9	808,780	265,279	23.0
STERIS CORP.....	21,986	104,693	0.02	4,000	3,772	8.8	587,852	994,396	22.4
STRYKER CORP.....	64,370	23,914	0.05	5,274	4,500	-11.6	910,060	719,656	7.7
THERMOTREX CORP.....	24,986	56,895	0.03	1,383	5,691	28.3	182,029	980,135	55.0
TREX MEDICAL CORP.....	58,000	32,067	0.02	6,133	1,712	23.8	1,112,700	282,121	5.3
U S SURGICAL CORP.....	52,854	24,705	0.06	1,356	1,041	23.8	136,371	229,294	6.8
ALARIS MEDICAL INC.....	21,059	71,800	0.06	275	5,776		624	1,172,100	
HEARTPORT INC.....	54,322	58,000		4,742			706,131		
NELLCOR PURITAN BENNETT INC.....	30,796	52,854		548			54,942		
VENTRITEX INC.....		21,059							

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Table 4. Comparison of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: R&D, employment, and sales

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	R&D						Employment				Sales	
	1997		1996		As a percent of the total 500 in 1997	Percent change from 1996-97	Number of employees		Percent change from 1996-97	In thousands of dollars		Percent change from 1996-97
							1996	1997		1996	1997	
Major & detailed industrial sector/top 500 corporations ¹												
Motor vehicles & other surface transportation equipment												
Ships, trains, motorcycles, bicycles, campers, military tanks												
BRUNSWICK CORP.....		232,470	86,500	286,808	0.26	72,870	85,060	11,380,938	16.7	12,868,704	13.1	
GENERAL DYNAMICS CORP.....		38,000	55,000	55,000	0.05	23,100	29,000	3,581,000	25.5	4,062,000	13.4	
HARLEY-DAVIDSON INC.....		37,700	53,300	53,300	0.05	5,470	6,060	1,577,737	10.8	1,829,567	16.0	
NEWPORT NEWS SHIPBUILDING.....		42,000	38,000	38,000	0.03	18,000	18,400	1,870,000	2.2	1,707,000	-8.7	
POLARIS INDS INC.....		28,270	26,722	26,722	0.02	3,500	2,900	1,191,901	-17.1	1,048,296	-12.0	
WESTINGHOUSE AIR BRAKE CO.....			24,386	24,386	0.02		3,400			564,441		
Motor vehicles & motor vehicle equipment												
ARVIN INDUSTRIES INC.....		19,025,535	18,093,401	18,093,401	16.25	1,473,510	1,464,521	421,316,413	-0.6	442,968,546	5.1	
BORG WARNER AUTO.....		26,200	25,300	25,300	0.02	12,982	14,324	2,212,700	10.3	2,349,000	6.2	
BREED TECHNOLOGIES INC.....		54,400	59,000	59,000	0.05	9,800	10,400	1,540,100	6.1	1,767,000	14.7	
CHRYSLER CORP.....		24,090	36,121	36,121	0.03	7,000	11,100	435,665	58.6	794,973	82.5	
DANA CORP.....		1,600,000	1,700,000	1,700,000	1.53	126,000	121,000	59,333,000	-4.0	58,622,000	-1.2	
ECHLIN INC.....		164,000	193,000	193,000	0.17	46,100	47,900	7,889,500	3.9	8,769,400	11.2	
EXCEL INDUSTRIES INC.....		44,711	51,844	51,844	0.05	27,700	31,300	3,128,728	13.0	3,568,572	14.1	
FORD MOTOR CO.....		6,821,000	6,327,000	6,327,000	5.68	371,702	363,892	146,991,000	-2.1	153,627,000	4.5	
GENERAL MOTORS CORP.....		8,900,000	8,200,000	8,200,000	7.36	647,000	608,000	160,121,000	-6.0	168,190,000	5.0	
ITT INDUSTRIES INC.....		535,200	496,900	496,900	0.45	59,000	58,500	8,718,100	-0.8	8,777,100	0.7	
MERITOR AUTOMOTIVE INC.....		51,000	54,000	54,000	0.05	15,300	16,900	3,144,000	10.5	3,309,000	5.2	
NAVISTAR INTERNATIONAL.....		101,000	92,000	92,000	0.08	14,187	16,168	5,705,000	14.0	6,321,000	10.8	
PACCAR INC.....		47,000	84,000	84,000	0.08	17,000	19,000	4,584,700	11.8	6,751,900	47.3	
STANDARD PRODUCTS CO.....		40,934	45,991	45,991	0.04	10,177	10,350	1,083,920	1.7	1,108,268	2.2	
TENNECO INC.....		60,000	53,000	53,000	0.05	44,362	49,335	6,572,000	11.2	7,220,000	9.9	
TRW INC.....		556,000	650,000	650,000	0.58	65,200	79,700	9,857,000	22.2	10,831,000	9.9	

¹Note that data are only provided for companies in the years for which those companies were in the top 500 in R&D spending. For example, if a company were in the top 500 in 1997 but not in 1996, then its R&D expenditure level in 1997 is provided, but its R&D expenditure level in 1996 and all other measures for 1996 are left as blank spaces. This was done to better facilitate comparisons across aggregates of major and minor sectors. In contrast, there are some cases in which, for a particular year, the company in question was, in fact, among the top 500 for R&D, but data are simply not available with regard to employment or sales. In this latter situation, the cells for which data are unavailable are denoted by "NA" for "not available".

SOURCE: Standard and Poor's Compustat, Englewood, CO

Table 5. Comparisons of 1996 and 1997 top 500 corporations for R&D by detailed sector and firm: capital expenditure

Major & detailed industrial sector/corporation ¹		Capital expenditure		
		1996	1997	Change from 1996-97
1997	1996	[In thousands of dollars]		[Percent]
Top 500 firms (across all industries)		199,057,903	209,635,382	5.3
Aircraft, guided missiles & space vehicles		3,686,100	4,449,900	20.7
ALLIEDSIGNAL INC.....	ALLIEDSIGNAL INC.....	755,000	717,000	-5.0
BOEING CO.....	BOEING CO.....	762,000	1,391,000	82.5
GENCORP INC.....	GENCORP INC.....	47,000	58,000	23.4
GOODRICH (B F) CO.....	GOODRICH (B F) CO.....	184,100	159,900	-13.1
LOCKHEED MARTIN CORP.....	LOCKHEED MARTIN CORP.....	737,000	750,000	1.8
SUNDSTRAND CORP.....	SUNDSTRAND CORP.....	64,000	119,000	85.9
TEXTRON INC.....	TEXTRON INC.....	343,000	412,000	20.1
UNITED TECHNOLOGIES CORP.....	UNITED TECHNOLOGIES CORP.....	794,000	843,000	6.2
	MCDONNELL DOUGLAS CORP.....	NA		
Basic industries & materials		50,392,908	51,713,149	2.6
Agr. services; forestry; fishing; mining; construction		146,700	186,400	27.1
DEKALB GENETICS CORP -CL B.....	DEKALB GENETICS CORP -CL B.....	30,700	59,400	93.5
PIONEER HI-BRED INTERNATIONL.....	PIONEER HI-BRED INTERNATIONL.....	116,000	127,000	9.5
Fabricated metal products, except machinery & transp. eq.		2,044,074	2,076,520	1.6
AEROQUIP-VICKERS INC.....	AEROQUIP-VICKERS INC.....	90,626	139,811	54.3
CROWN CORK & SEAL CO INC.....	CROWN CORK & SEAL CO INC.....	631,200	514,800	-18.4
DANAHER CORP.....	DANAHER CORP.....	51,255	62,808	22.5
FORTUNE BRANDS INC.....	FORTUNE BRANDS INC.....	239,600	196,900	-17.8
GILLETTE CO.....	GILLETTE CO.....	829,700	973,000	17.3
PARKER-HANNIFIN CORP.....	PARKER-HANNIFIN CORP.....	201,693	189,201	-6.2
Food & kindred products; tobacco products		4,939,533	4,664,939	-5.6
BESTFOODS.....	BESTFOODS.....	540,000	321,000	-40.6
CAMPBELL SOUP CO.....	CAMPBELL SOUP CO.....	416,000	331,000	-20.4
HERSHEY FOODS CORP.....	HERSHEY FOODS CORP.....	159,433	172,939	8.5
KELLOGG CO.....	KELLOGG CO.....	307,300	312,400	1.7
NABISCO HLDGS CORP -CL A.....	NABISCO HLDGS CORP -CL A.....	437,000	392,000	-10.3
PHILIP MORRIS COS INC.....	PHILIP MORRIS COS INC.....	1,782,000	1,874,000	5.2
QUAKER OATS CO.....	QUAKER OATS CO.....	242,700	215,700	-11.1
RALSTON PURINA CO.....	RALSTON PURINA CO.....	314,100	282,900	-9.9
RJR NABISCO HLDGS CORP.....	RJR NABISCO HLDGS CORP.....	741,000	763,000	3.0
Lumber, wood products, & furniture		2,079,671	1,439,200	-30.8
BE AEROSPACE INC.....	BE AEROSPACE INC.....	14,471	NA	NA
HILLENBRAND INDUSTRIES.....	HILLENBRAND INDUSTRIES.....	92,000	85,000	-7.6
JOHNSON CONTROLS INC.....	JOHNSON CONTROLS INC.....	370,400	370,900	0.1
LEAR CORP.....	LEAR CORP.....	153,800	187,900	22.2
STEELCASE INC.....	STEELCASE INC.....	122,000	126,400	3.6
WEYERHAEUSER CO.....	WEYERHAEUSER CO.....	1,327,000	669,000	-49.6

See SOURCE at end of table

Table 5. Comparisons of 1996 and 1997 top 500 for R&D by detailed sector and firm: capital expenditure

Major & detailed industrial sector/corporation ¹		Capital expenditure		
		1996	1997	Change from 1996-97
1997	1996	[In thousands of dollars]		[Percent]
Misc. products (leather, toys, jewelry, musical inst.)		382,531	421,955	10.3
CALLAWAY GOLF CO.....			67,938	
HASBRO INC.....	HASBRO INC.....	101,946	99,356	-2.5
INTL GAME TECHNOLOGY.....	INTL GAME TECHNOLOGY.....	71,575	33,088	-53.8
MATTEL INC.....	MATTEL INC.....	209,010	221,573	6.0
Printing, publishing, & allied industries		272,158	395,504	45.3
DOW JONES & CO INC.....	DOW JONES & CO INC.....	232,178	347,797	49.8
REYNOLDS & REYNOLDS -CL A.....	REYNOLDS & REYNOLDS -CL A.....	39,980	47,707	19.3
Stone, clay, glass, & concrete products		1,434,758	1,598,779	11.4
CORNING INC.....	CORNING INC.....	597,800	774,800	29.6
DONNELLY CORP.....	DONNELLY CORP.....	20,585	35,151	70.8
JOHNS MANVILLE INTL GRP INC.....	JOHNS MANVILLE INTL GRP INC.....	102,973	90,528	-12.1
OWENS CORNING.....	OWENS CORNING.....	325,000	227,000	-30.2
OWENS-ILLINOIS INC.....	OWENS-ILLINOIS INC.....	388,400	471,300	21.3
Textile & apparel products		108,767	113,793	4.6
ALBANY INTL CORP -CL A.....	ALBANY INTL CORP -CL A.....	53,473	50,804	-5.0
DEXTER CORP.....	DEXTER CORP.....	55,294	62,989	13.9
Oil & gas extraction; petrol. Refining & related ind		30,542,101	33,025,107	8.1
AMOCO CORP.....	AMOCO CORP.....	3,910,000	3,344,000	-14.5
ASHLAND INC.....	ASHLAND INC.....	510,000	431,000	-15.5
ATLANTIC RICHFIELD CO.....	ATLANTIC RICHFIELD CO.....	2,141,000	2,985,000	39.4
CHEVRON CORP.....	CHEVRON CORP.....	3,250,000	3,840,000	18.2
DRESSER INDUSTRIES INC.....	DRESSER INDUSTRIES INC.....	335,400	303,000	-9.7
EXXON CORP.....	EXXON CORP.....	7,209,000	7,393,000	2.6
HALLIBURTON CO.....	HALLIBURTON CO.....	395,700	577,100	45.8
MOBIL CORP.....	MOBIL CORP.....	4,967,000	4,689,000	-5.6
PHILLIPS PETROLEUM CO.....	PHILLIPS PETROLEUM CO.....			
SCHLUMBERGER LTD.....	SCHLUMBERGER LTD.....	1,157,957	1,495,980	29.2
SHELL OIL CO.....	SHELL OIL CO.....	3,414,000	3,131,000	-8.3
TEXACO INC.....	TEXACO INC.....	2,897,000	4,131,000	42.6
WESTERN ATLAS INC.....	WESTERN ATLAS INC.....	355,044	705,027	98.6
Paper & allied products		4,908,441	5,102,898	4.0
AVERY DENNISON CORP.....	AVERY DENNISON CORP.....	187,600	177,300	-5.5
FORT JAMES CORP.....	FORT JAMES CORP.....	426,100	505,900	18.7
INTL PAPER CO.....	INTL PAPER CO.....	1,394,000	1,111,000	-20.3
KIMBERLY-CLARK CORP.....	KIMBERLY-CLARK CORP.....	883,700	944,300	6.9
MINNESOTA MINING & MFG CO.....	MINNESOTA MINING & MFG CO.....	1,109,000	1,406,000	26.8
UNION CAMP CORP.....	UNION CAMP CORP.....	386,443	337,226	-12.7
WESTVACO CORP.....	WESTVACO CORP.....	521,598	621,172	19.1

See SOURCE at end of table

Table 5. Comparisons of 1996 and 1997 top 500 for R&D by detailed sector and firm: capital expenditure

Major & detailed industrial sector/corporation ¹		Capital expenditure		
		1996	1997	Change from 1996-97
1997	1996	[In thousands of dollars]		[Percent]
Ferrous metal products		347,600	96,300	-72.3
ALLEGHENY TELEDYNE INC.....	ALLEGHENY TELEDYNE INC.....	88,600	96,300	8.7
	BETHLEHEM STEEL CORP.....	259,000		
Nonferrous metal products		1,768,670	1,370,489	-22.5
ALUMINUM CO OF AMERICA.....	ALUMINUM CO OF AMERICA.....	995,700	912,400	-8.4
ANDREW CORP.....	ANDREW CORP.....	52,475	49,144	-6.3
ENGELHARD CORP.....	ENGELHARD CORP.....	128,195	136,945	6.8
REYNOLDS METALS CO.....	REYNOLDS METALS CO.....	432,000	272,000	-37.0
	KAISER ALUMINUM CORP.....	160,300		
Rubber & misc. plastic prod. (tires, plastic footwear, etc.)		1,417,904	1,221,265	-13.9
ARMSTRONG WORLD INDS INC.....	ARMSTRONG WORLD INDS INC.....	220,700	141,700	-35.8
COLTEC INDUSTRIES.....	COLTEC INDUSTRIES.....	44,550	81,218	82.3
GOODYEAR TIRE & RUBBER CO.....	GOODYEAR TIRE & RUBBER CO.....	617,500	699,000	13.2
MARK IV INDUSTRIES INC.....	MARK IV INDUSTRIES INC.....	106,900	153,500	43.6
RUBBERMAID INC.....	RUBBERMAID INC.....	171,764	145,847	-15.1
	APTARGROUP INC.....	62,794		
	COOPER TIRE & RUBBER.....	193,696		
Chemicals		15,979,555	16,409,997	2.7
Industrial chem.; plastic & other synthetic materials		10,907,622	11,681,488	7.1
AIR PRODUCTS & CHEMICALS INC.....	AIR PRODUCTS & CHEMICALS INC.....	951,000	870,200	-8.5
ALBEMARLE CORP.....	ALBEMARLE CORP.....	90,439	85,284	-5.7
ARCO CHEMICAL CO.....	ARCO CHEMICAL CO.....	244,000	263,000	7.8
BORDEN INC.....	BORDEN INC.....	242,500	129,700	-46.5
BUSH BOAKE ALLEN INC.....	BUSH BOAKE ALLEN INC.....	39,629	33,481	-15.5
CROMPTON & KNOWLES CORP.....	CROMPTON & KNOWLES CORP.....	39,204	50,176	28.0
DOW CHEMICAL.....	DOW CHEMICAL.....	1,344,000	1,198,000	-10.9
DU PONT (E I) DE NEMOURS.....	DU PONT (E I) DE NEMOURS.....	3,303,000	4,768,000	44.4
EASTMAN CHEMICAL CO.....	EASTMAN CHEMICAL CO.....	789,000	749,000	-5.1
ETHYL CORP.....	ETHYL CORP.....	29,403	43,496	47.9
FERRO CORP.....	FERRO CORP.....	46,655	45,129	-3.3
INTL FLAVORS & FRAGRANCES.....	INTL FLAVORS & FRAGRANCES.....	79,425	58,211	-26.7
LUBRIZOL CORP.....	LUBRIZOL CORP.....	94,297	100,700	6.8
MILLENNIUM CHEMICALS INC.....	MILLENNIUM CHEMICALS INC.....	285,000	152,000	-46.7
MONSANTO CO.....	MONSANTO CO.....	692,000	644,000	-6.9
OLIN CORP.....	OLIN CORP.....	126,000	140,000	11.1
PRAXAIR INC.....	PRAXAIR INC.....	893,000	902,000	1.0
ROHM & HAAS CO.....	ROHM & HAAS CO.....	334,000	254,000	-24.0
SOLUTIA INC.....	SOLUTIA INC.....	192,000	165,000	-14.1
UNION CARBIDE CORP.....	UNION CARBIDE CORP.....	721,000	755,000	4.7
UNIVERSAL FOODS CORP.....	UNIVERSAL FOODS CORP.....	59,012	73,502	24.6
WITCO CORP.....	WITCO CORP.....	161,163	201,609	25.1
	INTL SPECIALTY PRODS INC.....	54,587		
	MINERALS TECHNOLOGIES INC.....	97,308		

See SOURCE at end of table

Table 5. Comparisons of 1996 and 1997 top 500 for R&D by detailed sector and firm: capital expenditure

Major & detailed industrial sector/corporation ¹		Capital expenditure		
		1996	1997	Change from 1996-97
1997	1996	[In thousands of dollars]		[Percent]
Other chem. (soaps, ink, paints, fertilizers, explosives, etc.)		5,071,933	4,728,509	-6.8
AVON PRODUCTS.....	AVON PRODUCTS.....	103,600	169,400	63.5
BETZDEARBORN INC.....	BETZDEARBORN INC.....	64,900	78,000	20.2
CARTER-WALLACE INC.....	CARTER-WALLACE INC.....	31,066	15,676	-49.5
CLOROX CO/DE.....	CLOROX CO/DE.....	84,804	95,188	12.2
COLGATE-PALMOLIVE CO.....	COLGATE-PALMOLIVE CO.....	459,000	478,500	4.2
CYTEC INDUSTRIES INC.....	CYTEC INDUSTRIES INC.....	72,500	91,400	26.1
ECOLAB INC.....	ECOLAB INC.....	111,518	121,667	9.1
FMC CORP.....	FMC CORP.....	533,000	316,700	-40.6
FULLER (H. B.) CO.....	FULLER (H. B.) CO.....	89,847	69,224	-23.0
GRACE (W R) & CO.....	GRACE (W R) & CO.....	456,600	258,700	-43.3
GREAT LAKES CHEMICAL CORP.....	GREAT LAKES CHEMICAL CORP.....	237,464	132,981	-44.0
HERCULES INC.....	HERCULES INC.....	120,000	119,000	-0.8
LAUDER ESTEE COS INC -CL A.....	LAUDER ESTEE COS INC -CL A.....	63,400	82,900	30.8
MORTON INTERNATIONAL INC.....	MORTON INTERNATIONAL INC.....	216,400	117,400	-45.7
NALCO CHEMICAL CO.....	NALCO CHEMICAL CO.....	92,500	101,400	9.6
PPG INDUSTRIES INC.....	PPG INDUSTRIES INC.....	NA	NA	NA
PROCTER & GAMBLE CO.....	PROCTER & GAMBLE CO.....	2,179,000	2,129,000	-2.3
REVLON CONSUMER PRODUCTS CP.....	REVLON CONSUMER PRODUCTS CP.....	58,000	56,500	-2.6
SHERWIN-WILLIAMS CO.....			163,955	
SMITH INTERNATIONAL INC.....	SMITH INTERNATIONAL INC.....	72,958	82,787	13.5
VALSPAR CORP.....	VALSPAR CORP.....	25,376	48,131	89.7
Engineering, accounting, & research/testing services		133,190	163,012	22.4
CERIDIAN CORP.....	CERIDIAN CORP.....	52,700	44,200	-16.1
EG&G INC.....	EG&G INC.....	80,490	48,729	-39.5
SCIENCE APPLCTNS INTL.....			70,083	
Finance, insurance, real estate		37,133	258,815	597.0
INTERDIGITAL COMMUN CORP.....	INTERDIGITAL COMMUN CORP.....	4,073	3,475	-14.7
LORAL SPACE & COMMUNICATIONS.....			255,340	
	SEI INVESTMENTS CO.....	33,060		
General services		3,061,709	3,339,130	9.1
Other (noncomputer) bus. serv (advertising, equip. rental, etc.)		44,956	62,998	40.1
CELLNET DATA SYSTEMS INC.....	CELLNET DATA SYSTEMS INC.....	44,956	56,059	24.7
CMG INFORMATION SERVICES INC.....			6,939	
Transportation; freight & warehousing; & pipeline services		2,339,600	3,233,000	38.2
UNITED STATES POSTAL SERVICE.....	UNITED STATES POSTAL SERVICE.....	2,339,600	3,233,000	38.2

See SOURCE at end of table

Table 5. Comparisons of 1996 and 1997 top 500 for R&D by detailed sector and firm: capital expenditure

Major & detailed industrial sector/corporation ¹		Capital expenditure		
		1996	1997	Change from 1996-97
1997	1996	[In thousands of dollars]		[Percent]
Wholesale & retail trade		677,153	43,132	-93.6
CRANE CO.....	CRANE CO.....	50,471	40,642	-19.5
SCIOS INC.....	SCIOS INC.....	6,682	2,490	-62.7
	TRICON GLOBAL RESTAURANTS.....	620,000		
Information & electronics		53,018,113	53,624,756	1.1
Calculating/accounting mach. & office machines, nec		362,873	374,291	3.1
BELL & HOWELL COMPANY.....	BELL & HOWELL COMPANY.....	42,744	36,380	-14.9
DIEBOLD INC.....	DIEBOLD INC.....	33,581	67,722	101.7
PITNEY BOWES INC.....	PITNEY BOWES INC.....	271,972	244,065	-10.3
TELXON CORP.....	TELXON CORP.....	14,576	26,124	79.2
Communications serv. (phone, satellite, radio/TV, cable, etc.)		13,555,977	12,676,013	-6.5
AT&T CORP.....	AT&T CORP.....	6,339,000	7,143,000	12.7
GEOTEK COMMUNICATIONS.....	GEOTEK COMMUNICATIONS.....	50,046	61,720	23.3
GTE CORP.....	GTE CORP.....	4,088,000	5,128,000	25.4
OMNIPOINT CORP.....	OMNIPOINT CORP.....	173,831	338,725	94.9
SMARTALK TELESERVICES INC.....			4,568	
	NYNEX CORP.....	2,905,100		
Computer integrated systems design		130,094	380,542	192.5
CERNER CORP.....	CERNER CORP.....	15,341	14,982	-2.3
HBO & CO.....	HBO & CO.....	20,779	63,068	203.5
INTERGRAPH CORP.....	INTERGRAPH CORP.....	30,563	24,785	-18.9
MENTOR GRAPHICS CORP.....	MENTOR GRAPHICS CORP.....	23,931	32,614	36.3
SABRE GROUP HLDGS INC -CL A.....			218,124	
SHARED MEDICAL SYSTEMS CORP.....	SHARED MEDICAL SYSTEMS CORP.....	28,232	26,969	-4.5
	LANDMARK GRAPHICS CORP.....	11,248		
Computer networking communications equip		1,126,597	913,803	-18.9
3COM CORP.....	3COM CORP.....	247,803	NA	NA
ADAPTEC INC.....	ADAPTEC INC.....	87,959	97,699	11.1
ASCEND COMMUNICATIONS INC.....	ASCEND COMMUNICATIONS INC.....	38,703	105,343	172.2
AUSPEX SYSTEMS INC.....			16,385	
BAY NETWORKS INC.....	BAY NETWORKS INC.....	170,574	109,938	-35.5
CABLETRON SYSTEMS.....	CABLETRON SYSTEMS.....	94,368	74,264	-21.3
CIRRUS LOGIC INC.....	CIRRUS LOGIC INC.....	30,722	NA	NA
CISCO SYSTEMS INC.....	CISCO SYSTEMS INC.....	282,840	330,297	16.8
DIALOGIC CORP.....	DIALOGIC CORP.....	10,722	10,712	-0.1
ELECTRONICS FOR IMAGING INC.....	ELECTRONICS FOR IMAGING INC.....	10,655	38,530	261.6
FORE SYSTEMS INC.....	FORE SYSTEMS INC.....	38,875	48,827	25.6
NETWORK EQUIPMENT TECH INC.....	NETWORK EQUIPMENT TECH INC.....	13,910	30,322	118.0
S3 INCORPORATED.....	S3 INCORPORATED.....	23,403	28,085	20.0
SHIVA CORP.....	SHIVA CORP.....	16,089	11,295	-29.8
XYLAN CORP.....			12,106	

See SOURCE at end of table

Table 5. Comparisons of 1996 and 1997 top 500 for R&D by detailed sector and firm: capital expenditure

Major & detailed industrial sector/corporation ¹		Capital expenditure		
		1996	1997	Change from 1996-97
1997	1996	[In thousands of dollars]		[Percent]
Computer networking communications equip.— continued	CASCADE COMMUNICATIONS CORP.....	32,334		
	DIGI INTERNATIONAL INC.....	12,902		
	NETWORK GENERAL CORP.....	14,738		
Computer peripheral equip. (printers, scanners, etc.)		221,473	167,816	-24.2
CALCOMP TECHNOLOGY INC.....	CALCOMP TECHNOLOGY INC.....	6,593	10,942	66.0
C-CUBE MICROSYSTEMS INC.....	C-CUBE MICROSYSTEMS INC.....	17,141	13,572	-20.8
DIAMOND MULTIMEDIA SYS INC.....			7,219	
LEXMARK INTL GRP INC -CL A.....	LEXMARK INTL GRP INC -CL A.....	145,000	69,500	-52.1
LOGITECH INTL S A -ADR.....	LOGITECH INTL S A -ADR.....	18,059	13,013	-27.9
SECURITY DYNAMICS TECH INC.....			10,891	
SYMBOL TECHNOLOGIES.....	SYMBOL TECHNOLOGIES.....	34,680	42,679	23.1
Computer storage devices		2,004,239	2,076,732	3.6
DATA GENERAL CORP.....	DATA GENERAL CORP.....	94,670	110,505	16.7
DIGITAL EQUIPMENT.....	DIGITAL EQUIPMENT.....	431,307	395,691	-8.3
EMC CORP/MA.....	EMC CORP/MA.....	125,973	210,797	67.3
EXABYTE CORP.....	EXABYTE CORP.....	19,276	11,810	-38.7
IOMEGA CORP.....	IOMEGA CORP.....	73,457	85,871	16.9
QUANTUM CORP.....	QUANTUM CORP.....	174,977	149,749	-14.4
SEAGATE TECHNOLOGY.....	SEAGATE TECHNOLOGY.....	906,937	890,458	-1.8
STORAGE TECHNOLOGY CP -CL A.....	STORAGE TECHNOLOGY CP -CL A.....	68,946	65,893	-4.4
WESTERN DIGITAL CORP.....	WESTERN DIGITAL CORP.....	108,696	155,958	43.5
	SYQUEST TECHNOLOGY INC.....		NA	
Electronic components (semiconductors, coils, etc.)		11,985,814	11,249,167	-6.1
ACTEL CORP.....	ACTEL CORP.....	7,786	6,764	-13.1
ADVANCED MICRO DEVICES.....	ADVANCED MICRO DEVICES.....	485,018	685,100	41.3
ALTERA CORP.....	ALTERA CORP.....	45,172	80,879	79.0
AMP INC.....	AMP INC.....	592,341	481,286	-18.7
ANALOG DEVICES.....	ANALOG DEVICES.....	234,099	179,374	-23.4
APPLIED MAGNETICS CORP.....	APPLIED MAGNETICS CORP.....	69,900	96,065	37.4
ARTESYN TECHNOLOGIES INC.....			22,231	
ATMEL CORP.....	ATMEL CORP.....	511,019	312,066	-38.9
BERG ELECTRONICS CORP.....	BERG ELECTRONICS CORP.....	61,556	85,010	38.1
BURR-BROWN CORP.....	BURR-BROWN CORP.....	31,919	25,637	-19.7
CHIPS & TECHNOLOGIES INC.....	CHIPS & TECHNOLOGIES INC.....	3,324	5,049	51.9
CYPRESS SEMICONDUCTOR CORP.....	CYPRESS SEMICONDUCTOR CORP.....	195,280	142,305	-27.1
DALLAS SEMICONDUCTOR CORP.....	DALLAS SEMICONDUCTOR CORP.....	60,451	58,645	-3.0
ESS TECHNOLOGY INC.....	ESS TECHNOLOGY INC.....	14,015	15,207	8.5
INTEGRATED CIRCUIT SYSTEMS.....			3,358	
INTEGRATED SILICON SOLUTION.....	INTEGRATED SILICON SOLUTION.....	20,423	13,985	-31.5
INTEL CORP.....	INTEL CORP.....	3,024,000	4,501,000	48.8
INTL RECTIFIER CORP.....	INTL RECTIFIER CORP.....	112,275	99,762	-11.1
KEMET CORP.....	KEMET CORP.....	84,753	114,516	35.1

See SOURCE at end of table

Table 5. Comparisons of 1996 and 1997 top 500 for R&D by detailed sector and firm: capital expenditure

Major & detailed industrial sector/corporation ¹		Capital expenditure		
		1996	1997	Change from 1996-97
1997	1996	[In thousands of dollars]		[Percent]
Electronic components (semiconductors, coils, etc.)—continued				
LEVEL ONE COMMUNICATIONS INC.....	LEVEL ONE COMMUNICATIONS INC.....	9,837	17,033	73.2
LINEAR TECHNOLOGY CORP.....	LINEAR TECHNOLOGY CORP.....	70,383	21,850	-69.0
LSI LOGIC CORP.....	LSI LOGIC CORP.....	361,776	513,298	41.9
MAXIM INTEGRATED PRODUCTS.....	MAXIM INTEGRATED PRODUCTS.....	75,061	44,187	-41.1
MEMC ELECTRONIC MATERIALS INC.....	MEMC ELECTRONIC MATERIALS INC.....	590,049	372,416	-36.9
MICROCHIP TECHNOLOGY INC.....	MICROCHIP TECHNOLOGY INC.....	79,012	145,301	83.9
MICRON TECHNOLOGY INC.....	MICRON TECHNOLOGY INC.....	1,425,900	516,900	-63.7
MOLEX INC.....	MOLEX INC.....	222,389	208,558	-6.2
NATIONAL SEMICONDUCTOR CORP.....	NATIONAL SEMICONDUCTOR CORP.....	593,000	622,000	4.9
OAK TECHNOLOGY INC.....	OAK TECHNOLOGY INC.....	12,665	6,908	-45.5
READ-RITE CORP.....	READ-RITE CORP.....	265,847	272,768	2.6
SCI SYSTEMS INC.....	SCI SYSTEMS INC.....	109,912	109,739	-0.2
TEXAS INSTRUMENTS INC.....	TEXAS INSTRUMENTS INC.....	2,063,000	1,238,000	-40.0
THOMAS & BETTS CORP.....	THOMAS & BETTS CORP.....	107,807	116,719	8.3
VLSI TECHNOLOGY INC.....	VLSI TECHNOLOGY INC.....	270,466	85,551	-68.4
XILINX INC.....	XILINX INC.....	26,803	29,700	10.8
	CYRIX CORP.....	12,634		
	HUTCHINSON TECH.....	77,065		
	SILICONIX INC.....	39,511		
	STANDARD MICROSYSTEMS CORP.....	19,366		
Electronic computers & computer terminals		9,964,264	11,491,962	15.3
APPLE COMPUTER INC.....	APPLE COMPUTER INC.....	67,000	53,000	-20.9
COMPAQ COMPUTER CORP.....	COMPAQ COMPUTER CORP.....	342,000	729,000	113.2
DELL COMPUTER CORP.....	DELL COMPUTER CORP.....	114,000	187,000	64.0
ENCORE COMPUTER CORP.....	ENCORE COMPUTER CORP.....	7,433	1,525	-79.5
HEWLETT-PACKARD CO.....	HEWLETT-PACKARD CO.....	2,201,000	2,338,000	6.2
INTL BUSINESS MACHINES CORP.....	INTL BUSINESS MACHINES CORP.....	5,883,000	6,793,000	15.5
NCR CORP.....	NCR CORP.....	423,000	309,000	-27.0
SEQUENT COMPUTER SYSTEMS INC.....	SEQUENT COMPUTER SYSTEMS INC.....	80,617	58,698	-27.2
SILICON GRAPHICS INC.....	SILICON GRAPHICS INC.....	188,853	214,989	13.8
STRATUS COMPUTER INC.....	STRATUS COMPUTER INC.....	48,165	73,832	53.3
SUN MICROSYSTEMS INC.....	SUN MICROSYSTEMS INC.....	295,638	554,018	87.4
UNISYS CORP.....	UNISYS CORP.....	162,300	179,900	10.8
	TANDEM COMPUTERS INC.....	151,258		
Household audio & video equipment, & audio recordings		1,053,054	1,035,678	-1.7
GENERAL MOTORS CL H.....	GENERAL MOTORS CL H.....	843,500	884,800	4.9
HARMAN INTERNATIONAL INDS.....	HARMAN INTERNATIONAL INDS.....	80,554	68,378	-15.1
ZENITH ELECTRONICS CORP.....	ZENITH ELECTRONICS CORP.....	129,000	82,500	-36.0
Laboratory controlling & measuring instruments		1,547,567	1,665,022	7.6
ANALOGIC CORP.....	ANALOGIC CORP.....	6,233	6,301	1.1
BECKMAN COULTER INC.....	BECKMAN COULTER INC.....	110,500	100,900	-8.7
BIO-RAD LABS -CL A.....	BIO-RAD LABS -CL A.....	15,235	23,571	54.7
COHERENT INC.....	COHERENT INC.....	24,930	24,864	-0.3

See SOURCE at end of table

Table 5. Comparisons of 1996 and 1997 top 500 for R&D by detailed sector and firm: capital expenditure

Major & detailed industrial sector/corporation ¹		Capital expenditure		
		1996	1997	Change from 1996-97
1997	1996	[In thousands of dollars]		[Percent]
Laboratory controlling & measuring instruments—continued				
CREDESCENCE SYSTEMS CORP.....	CREDESCENCE SYSTEMS CORP.....	24,689	16,223	-34.3
EMERSON ELECTRIC CO.....	EMERSON ELECTRIC CO.....	513,500	575,400	12.1
HONEYWELL INC.....	HONEYWELL INC.....	296,500	298,300	0.6
KLA-TENCOR CORP.....	KLA-TENCOR CORP.....	39,089	56,793	45.3
LTX CORP.....	LTX CORP.....	20,006	16,116	-19.4
MILLIPORE CORP.....	MILLIPORE CORP.....	30,427	41,063	35.0
PERKIN-ELMER CORP.....	PERKIN-ELMER CORP.....	32,367	62,167	92.1
QUICKTURN DESIGN SYSTEMS INC.....			7,529	
ROBOTIC VISION SYSTEMS INC.....			6,869	
SEPRACOR INC.....	SEPRACOR INC.....	10,121	2,653	-73.8
SNAP-ON INC.....	SNAP-ON INC.....	52,333	55,442	5.9
TERADYNE INC.....	TERADYNE INC.....	75,229	132,131	75.6
THERMO ELECTRON CORP.....	THERMO ELECTRON CORP.....	124,541	111,605	-10.4
THERMO INSTRUMENT SYSTEMS.....	THERMO INSTRUMENT SYSTEMS.....	19,134	29,198	52.6
THERMO OPTEK CORP.....	THERMO OPTEK CORP.....	7,502	7,342	-2.1
THERMOQUEST CORP.....	THERMOQUEST CORP.....	3,761	6,261	66.5
TRIMBLE NAVIGATION LTD.....	TRIMBLE NAVIGATION LTD.....	10,359	10,991	6.1
VARIAN ASSOCIATES INC.....	VARIAN ASSOCIATES INC.....	67,736	55,087	-18.7
WATERS CORP.....	WATERS CORP.....	10,064	18,216	81.0
	COGNEX CORP.....	10,154		
	MEASUREX CORP.....	10,369		
	TENCOR INSTRUMENTS.....	32,788		
Modems & other wired telephone equipment				
ADC TELECOMMUNICATIONS INC.....	ADC TELECOMMUNICATIONS INC.....	69,057	119,030	72.4
ADTRAN INC.....	ADTRAN INC.....	29,662	18,221	-38.6
ADVANCED FIBRE COMM INC.....			17,767	
ASPECT TELECOMMUNICATIONS.....	ASPECT TELECOMMUNICATIONS.....	33,210	24,922	-25.0
BROADBAND TECHNOLOGIES INC.....	BROADBAND TECHNOLOGIES INC.....	4,388	3,921	-10.6
CIENA CORP.....			66,627	
COMVERSE TECHNOLOGY INC.....	COMVERSE TECHNOLOGY INC.....	9,745	12,580	29.1
DSC COMMUNICATIONS CORP.....	DSC COMMUNICATIONS CORP.....	122,419	143,056	16.9
GENERAL DATACOMM INDS.....	GENERAL DATACOMM INDS.....	14,449	11,580	-19.9
LUCENT TECHNOLOGIES INC.....	LUCENT TECHNOLOGIES INC.....	939,000	1,635,000	74.1
PAIRGAIN TECHNOLOGIES INC.....			13,488	
PICTURETEL CORP.....	PICTURETEL CORP.....	38,547	21,645	-43.8
RELTEC CORP.....	RELTEC CORP.....	16,900	26,500	56.8
TELLABS INC.....	TELLABS INC.....	64,831	84,717	30.7
	BOSTON TECHNOLOGY INC.....	22,482		
	CENTIGRAM COMMUNICATIONS CP.....	10,615		
	OCTEL COMMUNICATIONS CORP.....	39,243		
	U S ROBOTICS CORP.....	189,010		

See SOURCE at end of table

Table 5. Comparisons of 1996 and 1997 top 500 for R&D by detailed sector and firm: capital expenditure

Major & detailed industrial sector/corporation ¹		Capital expenditure		
		1996	1997	Change from 1996-97
1997	1996	[In thousands of dollars]		[Percent]
Multiple & miscellaneous computer & data processing services		404,093	414,479	2.6
AMERICA ONLINE INC.....	AMERICA ONLINE INC.....	50,262	149,768	198.0
AUTOMATIC DATA PROCESSING.....	AUTOMATIC DATA PROCESSING.....	163,525	175,289	7.2
BARRA INC.....			8,858	
INCYTE PHARMACEUTICALS INC.....	INCYTE PHARMACEUTICALS INC.....	20,188	26,136	29.5
SUNGARD DATA SYSTEMS INC.....	SUNGARD DATA SYSTEMS INC.....	41,347	54,428	31.6
	COMPUSERVE CORP.....	120,590		
	CSG SYSTEMS INTL INC.....	8,181		
Ophthalmic goods, photograph. equip. & clocks		2,278,349	2,391,037	4.9
AVID TECHNOLOGY INC.....	AVID TECHNOLOGY INC.....			
BAUSCH & LOMB INC.....	BAUSCH & LOMB INC.....	130,300	126,100	-3.2
EASTMAN KODAK CO.....	EASTMAN KODAK CO.....	1,341,000	1,485,000	10.7
IMATION CORP.....	IMATION CORP.....	167,400	116,300	-30.5
POLAROID CORP.....	POLAROID CORP.....	121,800	134,300	10.3
ULTRATECH STEPPER INC.....	ULTRATECH STEPPER INC.....	7,849	9,337	19.0
XEROX CORP.....	XEROX CORP.....	510,000	520,000	2.0
Prepackaged software		2,099,650	2,074,568	-1.2
ACCLAIM ENMNT INC.....	ACCLAIM ENMNT INC.....	13,488	2,671	-80.2
ACTIVISION INC.....			8,288	
ADOBE SYSTEMS INC.....	ADOBE SYSTEMS INC.....	45,869	33,882	-26.1
ASPEN TECHNOLOGY INC.....	ASPEN TECHNOLOGY INC.....	7,017	18,093	157.8
AUTODESK INC.....	AUTODESK INC.....	17,409	15,000	-13.8
AVANT CORP.....	AVANT CORP.....	4,583	25,190	449.6
BAAN COMPANY NV.....	BAAN COMPANY NV.....	21,273	42,457	99.6
BEA SYSTEMS INC.....	BEA SYSTEMS INC.....	4,667	2,891	-38.1
BMC SOFTWARE INC.....	BMC SOFTWARE INC.....	26,803	66,980	149.9
BOOLE & BABBAGE INC.....			3,752	
BRODERBUND SOFTWARE INC.....	BRODERBUND SOFTWARE INC.....	3,963	4,445	12.2
CADENCE DESIGN SYS INC.....	CADENCE DESIGN SYS INC.....	62,089	92,428	48.9
CHECKFREE HOLDINGS CORP.....			9,755	
COMPUTER ASSOCIATES INTL INC.....	COMPUTER ASSOCIATES INTL INC.....	53,000	NA	NA
COMPUWARE CORP.....	COMPUWARE CORP.....	23,442	28,006	19.5
EDWARDS J D & CO.....	EDWARDS J D & CO.....	41,135	22,436	-45.5
ELECTRONIC ARTS INC.....	ELECTRONIC ARTS INC.....	36,212	45,238	24.9
FILENET CORP.....	FILENET CORP.....	17,866	14,266	-20.2
FTP SOFTWARE INC.....	FTP SOFTWARE INC.....	9,072	3,530	-61.1
HARBINGER CORP.....			8,576	
HYPERION SOFTWARE CORP.....	HYPERION SOFTWARE CORP.....	32,218	16,701	-48.2
I2 TECHNOLOGIES INC.....			14,158	
IDX SYSTEMS CORP.....	IDX SYSTEMS CORP.....	5,654	15,711	177.9
INDUS INTERNATIONAL INC.....			8,901	
INFINIUM SOFTWARE INC.....			3,240	
INFORMIX CORP.....	INFORMIX CORP.....	148,270	93,786	-36.7
INSO CORP.....			5,187	

See SOURCE at end of table

Table 5. Comparisons of 1996 and 1997 top 500 for R&D by detailed sector and firm: capital expenditure

Major & detailed industrial sector/corporation ¹		Capital expenditure		Change from 1996-97
		1996	1997	
1997	1996	[In thousands of dollars]		[Percent]
Prepackaged software—continued				
INTERSOLV.....			4,487	
INTUIT INC.....	INTUIT INC.....	69,321	27,597	-60.2
MANUGISTICS GROUP INC.....			NA	
MARCAM SOLUTIONS INC.....	MARCAM SOLUTIONS INC.....	6,114	3,510	-42.6
MICROPROSE INC.....	MICROPROSE INC.....	2,931	2,292	-21.8
MICROSOFT CORP.....	MICROSOFT CORP.....	494,000	499,000	1.0
MIDWAY GAMES INC.....	MIDWAY GAMES INC.....	3,107	4,699	51.2
NATIONAL INSTRUMENTS CORP.....	NATIONAL INSTRUMENTS CORP.....	6,811	21,998	223.0
NETMANAGE INC.....	NETMANAGE INC.....	4,716	326	-93.1
NETSCAPE COMMUNICATIONS CORP.....	NETSCAPE COMMUNICATIONS CORP.....	81,931	100,368	22.5
NETWORKS ASSOCIATES INC.....	NETWORKS ASSOCIATES INC.....	7,243	23,305	221.8
NOVELL INC.....	NOVELL INC.....	101,001	64,796	-35.8
ON TECHNOLOGY CORP.....	ON TECHNOLOGY CORP.....	4,476	1,728	-61.4
OPEN MARKET INC.....			7,146	
ORACLE CORP.....	ORACLE CORP.....	390,741	328,358	-16.0
PARAMETRIC TECHNOLOGY CORP.....	PARAMETRIC TECHNOLOGY CORP.....	29,650	28,809	-2.8
PEOPLESOFT INC.....			55,388	
PHOENIX TECHNOLOGIES LTD.....	PHOENIX TECHNOLOGIES LTD.....	4,328	6,561	51.6
PROGRESS SOFTWARE CORP.....	PROGRESS SOFTWARE CORP.....	9,545	10,048	5.3
QAD INC.....	QAD INC.....	3,443	13,561	293.9
RATIONAL SOFTWARE CORP.....	RATIONAL SOFTWARE CORP.....	9,143	29,961	227.7
SANTA CRUZ OPERATION INC.....	SANTA CRUZ OPERATION INC.....	4,874	1,796	-63.2
STERLING COMMERCE INC.....			32,148	
STERLING SOFTWARE INC.....	STERLING SOFTWARE INC.....	11,991	26,631	122.1
STRUCTURAL DYNAMICS RESEARCH.....	STRUCTURAL DYNAMICS RESEARCH.....	14,250	13,640	-4.3
SYBASE INC.....	SYBASE INC.....	82,258	36,362	-55.8
SYMANTEC CORP.....	SYMANTEC CORP.....	27,195	26,339	-3.1
SYNOPSIS INC.....	SYNOPSIS INC.....	39,221	54,486	38.9
SYSTEM SOFTWARE ASSOC INC.....	SYSTEM SOFTWARE ASSOC INC.....	11,400	4,900	-57.0
USCS INTL INC.....	USCS INTL INC.....	29,397	32,579	10.8
VERITAS SOFTWARE CO.....			6,181	
	3DO COMPANY.....	4,304		
	7TH LEVEL INC.....	9,643		
	CHEYENNE SOFTWARE INC.....	13,914		
	COMPUTERVISION CORP.....	11,479		
	GENERAL MAGIC INC.....	2,203		
	PURE ATRIA CORP.....	11,505		
	VIEWLOGIC SYSTEMS INC.....	6,892		
	WALL DATA INC.....	5,056		
	WONDERWARE CORP.....	11,537		
Radio, TV, cell phone, & satellite communication equipment				
ALLEN TELECOM INC.....	ALLEN TELECOM INC.....	17,457	22,247	27.4
GENERAL INSTRUMENT CORP.....	GENERAL INSTRUMENT CORP.....	227,902	79,828	-65.0
GLENAYRE TECHNOLOGIES INC.....	GLENAYRE TECHNOLOGIES INC.....	43,017	32,889	-23.5
HARRIS CORP.....	HARRIS CORP.....	292,900	349,900	19.5

See SOURCE at end of table

Table 5. Comparisons of 1996 and 1997 top 500 for R&D by detailed sector and firm: capital expenditure

Major & detailed industrial sector/corporation ¹		Capital expenditure		
		1996	1997	Change from 1996-97
1997	1996	[In thousands of dollars]		[Percent]
Radio, TV, cell phone, & satellite communication eq.—continued				
MOTOROLA INC.....	MOTOROLA INC.....	2,973,000	2,874,000	-3.3
P-COM INC.....			16,922	
PITTMAN CORP/DE -CL A.....			48,768	
QUALCOMM INC.....	QUALCOMM INC.....	216,554	163,115	-24.7
SCIENTIFIC-ATLANTA INC.....	SCIENTIFIC-ATLANTA INC.....	60,812	53,076	-12.7
VTEL CORP.....			18,781	
	CALIFORNIA MICROWAVE.....	27,701		
	SENSORMATIC ELECTRONICS.....	86,600		
Search & navigation equipment				
LITTON INDUSTRIES INC.....	LITTON INDUSTRIES INC.....	91,019	113,054	24.2
NORTHROP GRUMMAN CORP.....	NORTHROP GRUMMAN CORP.....	194,000	238,000	22.7
ORBITAL SCIENCES CORP.....	ORBITAL SCIENCES CORP.....	43,544	45,012	3.4
RAYTHEON CO -CL B.....	RAYTHEON CO -CL B.....	406,005	459,000	13.1
Machinery & electrical equipment				
Electrical equipment (industrial & household)				
COOPER INDUSTRIES INC.....	COOPER INDUSTRIES INC.....	201,900	195,700	-3.1
EATON CORP.....	EATON CORP.....	347,000	438,000	26.2
EVANS & SUTHERLAND CMP CORP.....	EVANS & SUTHERLAND CMP CORP.....	10,521	10,804	2.7
GENERAL ELECTRIC CO.....	GENERAL ELECTRIC CO.....	7,760,000	8,388,000	8.1
GENERAL SIGNAL CORP.....	GENERAL SIGNAL CORP.....	59,300	56,500	-4.7
KOMAG INC.....	KOMAG INC.....	403,062	199,112	-50.6
MAGNETEK INC.....	MAGNETEK INC.....	40,515	33,245	-17.9
MAYTAG CORP.....	MAYTAG CORP.....	211,455	229,561	8.6
RAYCHEM CORP.....	RAYCHEM CORP.....	78,589	90,485	15.1
ROCKWELL INTL CORP.....	ROCKWELL INTL CORP.....	866,000	683,000	-21.1
WHIRLPOOL CORP.....	WHIRLPOOL CORP.....	336,000	378,000	12.5
	BALDOR ELECTRIC.....	23,183		
	CHERRY CORP -CL A.....	39,092		
	DURACELL INTERNATIONAL.....	172,100		
Machinery (indus., farm, services, mining & construction)				
AGCO CORP.....	AGCO CORP.....	45,180	72,100	59.6
AMERN STANDARD CO INC.....	AMERN STANDARD CO INC.....	212,179	245,258	15.6
APPLIED MATERIALS INC.....	APPLIED MATERIALS INC.....	452,535	339,364	-25.0
BAKER-HUGHES INC.....	BAKER-HUGHES INC.....	182,157	342,700	88.1
BLACK & DECKER CORP.....	BLACK & DECKER CORP.....	196,300	203,100	3.5
CAMCO INTERNATIONAL INC.....	CAMCO INTERNATIONAL INC.....	33,533	95,754	185.6
CASE CORP.....	CASE CORP.....	162,000	292,000	80.2
CATERPILLAR INC.....	CATERPILLAR INC.....	771,000	1,106,000	43.5
CINCINNATI MILACRON INC.....	CINCINNATI MILACRON INC.....	65,200	79,500	21.9
CUMMINS ENGINE.....	CUMMINS ENGINE.....	304,000	405,000	33.2
CYMER INC.....			42,209	
DEERE & CO.....	DEERE & CO.....	575,300	1,025,700	78.3

See SOURCE at end of table

Table 5. Comparisons of 1996 and 1997 top 500 for R&D by detailed sector and firm: capital expenditure

Major & detailed industrial sector/corporation ¹		Capital expenditure		
		1996	1997	Change from 1996-97
1997	1996	[In thousands of dollars]		[Percent]
Machinery (indus., farm, services, mining & construction)—continued				
DETROIT DIESEL CORP.....	DETROIT DIESEL CORP.....	57,800	63,200	9.3
DOVER CORP.....	DOVER CORP.....	125,517	145,837	16.2
ETEC SYSTEMS INC.....			30,630	
FSI INTL INC.....	FSI INTL INC.....	33,112	42,880	29.5
GENERAL SCANNING INC.....			5,335	
HARNISCHFEGER INDUSTRIES INC.....	HARNISCHFEGER INDUSTRIES INC.....	66,562	133,497	100.6
ILLINOIS TOOL WORKS.....	ILLINOIS TOOL WORKS.....	168,657	178,702	6.0
INGERSOLL-RAND CO.....	INGERSOLL-RAND CO.....	195,000	186,000	-4.6
INTEGRATED PROCESS EQ.....	INTEGRATED PROCESS EQ.....	38,304	3,703	-90.3
KENNAMETAL INC.....	KENNAMETAL INC.....	57,556	73,779	28.2
KULICKE & SOFFA INDUSTRIES.....	KULICKE & SOFFA INDUSTRIES.....	18,028	13,516	-25.0
LAM RESEARCH CORP.....	LAM RESEARCH CORP.....	66,588	39,548	-40.6
NACCO INDUSTRIES -CL A.....	NACCO INDUSTRIES -CL A.....	79,400	68,400	-13.9
NORDSON CORP.....	NORDSON CORP.....	23,399	15,939	-31.9
NOVELLUS SYSTEMS INC.....	NOVELLUS SYSTEMS INC.....	35,285	36,153	2.5
PALL CORP.....	PALL CORP.....	82,222	88,605	7.8
PREMARK INTERNATIONAL INC.....	PREMARK INTERNATIONAL INC.....	84,100	81,400	-3.2
PRI AUTOMATION INC.....			6,031	
SILICON VALLEY GROUP INC.....	SILICON VALLEY GROUP INC.....	67,033	87,958	31.2
SPX CORP.....	SPX CORP.....	20,220	22,550	11.5
TECUMSEH PRODUCTS CO -CL A.....	TECUMSEH PRODUCTS CO -CL A.....	115,200	90,600	-21.4
THERMEDICS INC.....			7,087	
TIMKEN CO.....	TIMKEN CO.....	150,728	233,392	54.8
TORO CO.....	TORO CO.....	21,389	37,023	73.1
TYCO INTERNATIONAL LTD.....	TYCO INTERNATIONAL LTD.....	123,227	519,100	321.3
UNOVA INC.....	UNOVA INC.....	22,541	30,310	34.5
WATKINS-JOHNSON.....	WATKINS-JOHNSON.....	53,741	22,177	-58.7
YORK INTL.....	YORK INTL.....	73,576	66,854	-9.1
	SEMITOOL INC.....	10,194		
Medical substances & devices		9,966,717	10,648,623	6.8
Drugs: biological products, except diagnostic substances		462,530	564,931	22.1
AMGEN INC.....	AMGEN INC.....	266,900	387,800	45.3
AVIRON.....			5,767	
BIOGEN INC.....	BIOGEN INC.....	62,030	28,896	-53.4
CELL GENESYS INC.....			2,460	
CENTOCOR INC.....	CENTOCOR INC.....	4,674	23,570	404.3
CREATIVE BIOMOLECULES INC.....			2,811	
CYTOTHERAPEUTICS INC.....			7,710	
GENZYME CORP.....	GENZYME CORP.....	63,802	29,309	-54.1
GILEAD SCIENCES INC.....	GILEAD SCIENCES INC.....	3,727	3,861	3.6
HYBRIDON INC.....	HYBRIDON INC.....	8,903	7,510	-15.6
IDEC PHARMACEUTICALS CORP.....	IDEC PHARMACEUTICALS CORP.....	6,301	5,875	-6.8
IMMUNE RESPONSE CORP/DE.....	IMMUNE RESPONSE CORP/DE.....	1,613	2,526	56.6
IMMUNEX CORP.....	IMMUNEX CORP.....	4,656	7,409	59.1

See SOURCE at end of table

Table 5. Comparisons of 1996 and 1997 top 500 for R&D by detailed sector and firm: capital expenditure

Major & detailed industrial sector/corporation ¹		Capital expenditure		
		1996	1997	Change from 1996-97
1997	1996	[In thousands of dollars]		[Percent]
Drugs: biological products, except diagnostic substances—continued				
LIPOSOME COMPANY INC.....	LIPOSOME COMPANY INC.....	9,602	1,892	-80.3
MEDIMMUNE INC.....	MEDIMMUNE INC.....	22,675	36,728	62.0
NEUREX CORP.....	NEUREX CORP.....	541	1,741	221.8
PATHOGENESIS CORP.....	PATHOGENESIS CORP.....	961	4,370	354.7
SUGEN INC.....	SUGEN INC.....	1,665	3,177	90.8
XOMA CORP.....	XOMA CORP.....	1,050	1,519	44.7
	AUTOIMMUNE INC.....	1,280		
	MAGAININ PHARMACEUTICALS INC.....	1,655		
	TEXAS BIOTECHNOLOGY CORP.....	495		
Drugs: in vitro, in vivo diagnostic substances				
ALLIANCE PHARMACEUTICAL CP.....	ALLIANCE PHARMACEUTICAL CP.....	4,010	6,823	70.1
CHIRON CORP.....	CHIRON CORP.....	120,162	77,524	-35.5
CYTOGEN CORP.....	CYTOGEN CORP.....	886	654	-26.2
HUMAN GENOME SCIENCES INC.....	HUMAN GENOME SCIENCES INC.....	8,306	8,717	4.9
MALLINCKRODT INC.....	MALLINCKRODT INC.....	169,200	109,500	-35.3
MILLENNIUM PHARMACTCLS INC.....	MILLENNIUM PHARMACTCLS INC.....	3,210	4,256	32.6
	SEQUANA THERAPEUTICS INC.....	2,402		
Drugs: pharmaceutical preparations				
ABBOTT LABORATORIES.....	ABBOTT LABORATORIES.....	949,028	1,007,296	6.1
AGOURON PHARMACEUTICALS INC.....	AGOURON PHARMACEUTICALS INC.....	3,252	12,372	280.4
ALLERGAN INC.....	ALLERGAN INC.....	59,700	64,400	7.9
ALPHA BETA TECHNOLOGY INC.....	ALPHA BETA TECHNOLOGY INC.....	506	281	-44.5
ALPHARMA INC -CL A.....	ALPHARMA INC -CL A.....	30,874	27,783	-10.0
ALTEON INC.....			21	
ALZA CORP.....	ALZA CORP.....	48,600	38,800	-20.2
AMERICAN HOME PRODUCTS CORP.....	AMERICAN HOME PRODUCTS CORP.....	652,226	830,351	27.3
AMYLIN PHARMACEUTICALS INC.....	AMYLIN PHARMACEUTICALS INC.....	3,278	4,641	41.6
AXYS PHARMACEUTICALS INC.....	AXYS PHARMACEUTICALS INC.....	6,881	6,297	-8.5
BRISTOL MYERS SQUIBB.....	BRISTOL MYERS SQUIBB.....	601,000	767,000	27.6
CELL THERAPEUTICS INC.....			2,541	
CEPHALON INC.....	CEPHALON INC.....	2,058	823	-60.0
COGENSIS INC.....			1,475	
COR THERAPEUTICS INC.....	COR THERAPEUTICS INC.....	2,563	1,906	-25.6
GENENTECH INC.....	GENENTECH INC.....	141,837	154,902	9.2
GENSIA SICOR INC.....	GENSIA SICOR INC.....	12,701		
GUILFORD PHARMACEUTICAL INC.....			6,433	
ICOS CORPORATION.....	ICOS CORPORATION.....	4,531	5,830	28.7
INHALE THERAPEUTIC SYSTEMS.....			17,261	
INTERNEURON PHARMACEUTICALS.....	INTERNEURON PHARMACEUTICALS.....	1,850	3,273	76.9
ISIS PHARMACEUTICALS INC.....			3,454	
IVAX CORP.....	IVAX CORP.....	82,856	45,741	-44.8
JOHNSON & JOHNSON.....	JOHNSON & JOHNSON.....	1,373,000	1,391,000	1.3
LILLY (ELI) & CO.....	LILLY (ELI) & CO.....	443,900	366,300	-17.5
MATRIX PHARMACEUTICAL INC.....	MATRIX PHARMACEUTICAL INC.....	2,326	9,857	323.8

See SOURCE at end of table

Table 5. Comparisons of 1996 and 1997 top 500 for R&D by detailed sector and firm: capital expenditure

Major & detailed industrial sector/corporation ¹		Capital expenditure		
		1996	1997	Change from 1996-97
1997	1996	[In thousands of dollars]		[Percent]
Drugs: pharmaceutical preparations—				
continued				
MERCK & CO.....	MERCK & CO.....	1,196,700	1,448,800	21.1
MYLAN LABORATORIES.....	MYLAN LABORATORIES.....	26,854	28,853	7.4
NEXSTAR PHARMACEUTICALS.....	NEXSTAR PHARMACEUTICALS.....	11,198	10,484	-6.4
PFIZER INC.....	PFIZER INC.....	774,000	943,000	21.8
PHARMACIA & UPJOHN INC.....	PHARMACIA & UPJOHN INC.....	656,000	577,000	-12.0
REGENERON PHARMACEUT.....	REGENERON PHARMACEUT.....	8,622	2,146	-75.1
SCHERER (R P)/DE.....	SCHERER (R P)/DE.....	69,887	87,971	25.9
SCHERING-PLOUGH.....	SCHERING-PLOUGH.....	324,500		
SEQUUS PHARMACEUTICALS INC.....	SEQUUS PHARMACEUTICALS INC.....	3,639	2,987	-17.9
VERTEX PHARMACEUTICALS INC.....	VERTEX PHARMACEUTICALS INC.....	3,983	6,020	51.1
VIMRX PHARMACEUTICALS INC.....	VIMRX PHARMACEUTICALS INC.....	802	683	-14.8
WARNER-LAMBERT CO.....	WARNER-LAMBERT CO.....	389,000	494,800	27.2
	CYGNUS INC.....	1,515		
	GELTEX PHARMACEUTICALS INC.....	883		
	LIGAND PHARMACEUTICAL -CL B.....	399		
Medical instruments		1,305,062	1,503,436	15.2
ACUSON CORP.....	ACUSON CORP.....	34,465	37,377	8.4
AFFYMETRIX INC.....			16,001	
ATL ULTRASOUND INC.....	ATL ULTRASOUND INC.....	14,902	17,515	17.5
BARD (C.R.) INC.....	BARD (C.R.) INC.....	41,600	32,800	-21.2
BAXTER INTERNATIONAL INC.....	BAXTER INTERNATIONAL INC.....	398,000	496,000	24.6
BECTON DICKINSON & CO.....	BECTON DICKINSON & CO.....	145,929	170,349	16.7
BOSTON SCIENTIFIC CORP.....	BOSTON SCIENTIFIC CORP.....	135,320	220,097	62.6
DATASCOPE CORP.....	DATASCOPE CORP.....	4,967	5,310	6.9
DEPUY INC.....	DEPUY INC.....	24,882	25,052	0.7
GUIDANT CORP.....	GUIDANT CORP.....	62,100	76,800	23.7
INCONTROL INC.....	INCONTROL INC.....	2,151	5,742	166.9
MARQUETTE MEDICAL SYS.....	MARQUETTE MEDICAL SYS.....	18,211	25,537	40.2
MEDTRONIC INC.....	MEDTRONIC INC.....	171,329	148,152	-13.5
SPACELABS MED INC.....	SPACELABS MED INC.....	18,285	9,615	-47.4
ST JUDE MEDICAL INC.....	ST JUDE MEDICAL INC.....	95,018	93,962	-1.1
STERIS CORP.....	STERIS CORP.....	NA	NA	NA
STRYKER CORP.....	STRYKER CORP.....	26,724	35,213	31.8
THERMOTREX CORP.....	THERMOTREX CORP.....	14,462	26,853	85.7
TREX MEDICAL CORP.....			5,461	
U S SURGICAL CORP.....	U S SURGICAL CORP.....	42,300	55,600	31.4
	ALARIS MEDICAL INC.....	9,502		
	HEARTPORT INC.....	6,104		
	NELLCOR PURITAN BENNETT INC.....	29,740		
	VENTRITEX INC.....	9,071		

See SOURCE at end of table

Table 5. Comparisons of 1996 and 1997 top 500 for R&D by detailed sector and firm: capital expenditure

Major & detailed industrial sector/corporation ¹		Capital expenditure		
		1996	1997	Change from 1996-97
1997	1996	[In thousands of dollars]		[Percent]
Motor vehicles & other surface transportation equipment		47,444,998	51,746,702	9.1
Ships, trains, motorcycles, bicycles, campers, military tanks		542,560	556,665	2.6
BRUNSWICK CORP.....	BRUNSWICK CORP.....	169,900	190,500	12.1
GENERAL DYNAMICS CORP.....	GENERAL DYNAMICS CORP.....	75,000	83,000	10.7
HARLEY-DAVIDSON INC.....	HARLEY-DAVIDSON INC.....	178,771	186,171	4.1
NEWPORT NEWS SHIPBUILDING.....	NEWPORT NEWS SHIPBUILDING.....	74,000	31,000	-58.1
POLARIS INDS INC.....	POLARIS INDS INC.....	44,889	36,798	-18.0
WESTINGHOUSE AIR BRAKE CO.....			29,196	
Motor vehicles & motor vehicle equipment		46,902,438	51,190,037	9.1
ARVIN INDUSTRIES INC.....	ARVIN INDUSTRIES INC.....	79,100	96,900	22.5
BORG WARNER AUTO.....	BORG WARNER AUTO.....	91,900	135,100	47.0
BREED TECHNOLOGIES INC.....	BREED TECHNOLOGIES INC.....	45,370	75,851	67.2
CHRYSLER CORP.....	CHRYSLER CORP.....	5,429,000	7,150,000	31.7
DANA CORP.....	DANA CORP.....	356,500	426,000	19.5
ECHLIN INC.....	ECHLIN INC.....	104,384	149,195	42.9
EXCEL INDUSTRIES INC.....			39,287	
FORD MOTOR CO.....	FORD MOTOR CO.....	10,410,000	9,675,000	-7.1
GENERAL MOTORS CORP.....	GENERAL MOTORS CORP.....	28,443,000	31,393,000	10.4
ITT INDUSTRIES INC.....	ITT INDUSTRIES INC.....	406,300	459,700	13.1
MERITOR AUTOMOTIVE INC.....	MERITOR AUTOMOTIVE INC.....	144,000	119,000	-17.4
NAVISTAR INTERNATIONL.....	NAVISTAR INTERNATIONL.....	117,000	172,000	47.0
PACCAR INC.....	PACCAR INC.....	123,200	133,000	8.0
STANDARD PRODUCTS CO.....	STANDARD PRODUCTS CO.....	79,684	59,004	-26.0
TENNECO INC.....	TENNECO INC.....	573,000	558,000	-2.6
TRW INC.....	TRW INC.....	500,000	549,000	9.8

¹ Note that data are only provided for companies in the years for which those companies were in the top 500 in R&D spending. For example, if a company were in the top 500 in 1997 but not in 1996, then its R&D expenditure level in 1997 is provided, but its R&D expenditure level in 1996 and all other measures for 1996 are left as blank spaces. This was done to better facilitate comparisons across aggregates of major and minor sectors. In contrast, there are some cases in which, for a particular year, the company in question was, in fact, among the top 500 for R&D, but data are simply not available with regard to employment or sales. In this latter situation, the cells for which data are unavailable are denoted by "NA" for "not available".

SOURCE: Standard and Poor's Compustat, Englewood, CO