

```
In [1]: import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
```

```
In [2]: df=pd.read_csv("/Users/bob/Downloads/rainfall in india 1901-2015.csv")
df
```

Out[2]:

		index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	
0	0		ANDAMAN & NICOBAR ISLANDS	1901	49.2	87.1	29.2	2.3	528.8	517.5	365.1	481.1	3
1	1		ANDAMAN & NICOBAR ISLANDS	1902	0.0	159.8	12.2	0.0	446.1	537.1	228.9	753.7	6
2	2		ANDAMAN & NICOBAR ISLANDS	1903	12.7	144.0	0.0	1.0	235.1	479.9	728.4	326.7	3
3	3		ANDAMAN & NICOBAR ISLANDS	1904	9.4	14.7	0.0	202.4	304.5	495.1	502.0	160.1	8
4	4		ANDAMAN & NICOBAR ISLANDS	1905	1.3	0.0	3.3	26.9	279.5	628.7	368.7	330.5	2
...
4111	4111	LAKSHADWEEP	LAKSHADWEEP	2011	5.1	2.8	3.1	85.9	107.2	153.6	350.2	254.0	2
4112	4112	LAKSHADWEEP	LAKSHADWEEP	2012	19.2	0.1	1.6	76.8	21.2	327.0	231.5	381.2	1
4113	4113	LAKSHADWEEP	LAKSHADWEEP	2013	26.2	34.4	37.5	5.3	88.3	426.2	296.4	154.4	1
4114	4114	LAKSHADWEEP	LAKSHADWEEP	2014	53.2	16.1	4.4	14.9	57.4	244.1	116.1	466.1	1
4115	4115	LAKSHADWEEP	LAKSHADWEEP	2015	2.2	0.5	3.7	87.1	133.1	296.6	257.5	146.4	1

4116 rows × 20 columns

```
In [11]: df.columns
```

```
Out[11]: Index(['index', 'SUBDIVISION', 'YEAR', 'JAN', 'FEB', 'MAR', 'APR',
'MAY',
'JUN', 'JUL', 'AUG', 'SEP', 'OCT', 'NOV', 'DEC', 'ANNUAL',
'Jan-Feb',
'Mar-May', 'Jun-Sep', 'Oct-Dec'],
dtype='object')
```

```
In [12]: df.isnull().sum()
```

```
Out[12]: index      0
SUBDIVISION  0
YEAR        0
JAN         4
FEB         3
MAR         6
APR         4
MAY         3
JUN         5
JUL         7
AUG         4
SEP         6
OCT         7
NOV        11
DEC        10
ANNUAL     26
Jan–Feb    6
Mar–May    9
Jun–Sep    10
Oct–Dec    13
dtype: int64
```

```
In [3]: df=df.dropna()
df.isnull().sum()
```

```
Out[3]: index      0
SUBDIVISION  0
YEAR        0
JAN         0
FEB         0
MAR         0
APR         0
MAY         0
JUN         0
JUL         0
AUG         0
SEP         0
OCT         0
NOV         0
DEC         0
ANNUAL     0
Jan–Feb    0
Mar–May    0
Jun–Sep    0
Oct–Dec    0
dtype: int64
```

In [14]: `x=df[["SUBDIVISION"]]`
`x`

Out [14]: 0 ANDAMAN & NICOBAR ISLANDS
1 ANDAMAN & NICOBAR ISLANDS
2 ANDAMAN & NICOBAR ISLANDS
3 ANDAMAN & NICOBAR ISLANDS
4 ANDAMAN & NICOBAR ISLANDS
...
4111 LAKSHADWEEP
4112 LAKSHADWEEP
4113 LAKSHADWEEP
4114 LAKSHADWEEP
4115 LAKSHADWEEP
Name: SUBDIVISION, Length: 4090, dtype: object

In [15]: `x.value_counts()`

Out[15]: SUBDIVISION

WEST RAJASTHAN	115
SOUTH INTERIOR KARNATAKA	115
TAMIL NADU	115
RAYALSEEMA	115
TELANGANA	115
COASTAL ANDHRA PRADESH	115
CHHATTISGARH	115
VIDARBHA	115
MATATHWADA	115
MADHYA MAHARASHTRA	115
KONKAN & GOA	115
SAURASHTRA & KUTCH	115
GUJARAT REGION	115
EAST MADHYA PRADESH	115
KERALA	115
EAST RAJASTHAN	115
NORTH INTERIOR KARNATAKA	115
HIMACHAL PRADESH	115
PUNJAB	115
HARYANA DELHI & CHANDIGARH	115
UTTARAKHAND	115
WEST UTTAR PRADESH	115
EAST UTTAR PRADESH	115
BIHAR	115
JHARKHAND	115
ORISSA	115
GANGETIC WEST BENGAL	115
SUB HIMALAYAN WEST BENGAL & SIKKIM	115
NAGA MANI MIZO TRIPURA	115
ASSAM & MEGHALAYA	115
JAMMU & KASHMIR	114
COASTAL KARNATAKA	114
WEST MADHYA PRADESH	114
ANDAMAN & NICOBAR ISLANDS	104
LAKSHADWEEP	103
ARUNACHAL PRADESH	91
Name: count, dtype: int64	

WEST MADHYA PRADESH

In [16]: `x=df[df["SUBDIVISION"]=="WEST MADHYA PRADESH"]
x`

Out [16]:

		index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
		2047	2047	WEST MADHYA PRADESH	1901	25.8	5.8	5.8	2.8	2.1	41.2	228.9	349.9	47.9
		2048	2048	WEST MADHYA PRADESH	1902	22.1	8.4	0.0	2.0	5.9	35.9	401.9	179.4	194.1
		2049	2049	WEST MADHYA PRADESH	1903	5.3	0.0	0.0	0.0	22.3	50.6	304.9	261.1	250.2
		2050	2050	WEST MADHYA PRADESH	1904	3.2	15.5	14.8	0.0	12.0	96.6	273.0	218.6	125.9
		2051	2051	WEST MADHYA PRADESH	1905	3.5	4.4	1.1	0.8	3.0	36.1	326.3	137.6	183.5
		
		2157	2157	WEST MADHYA PRADESH	2011	0.0	1.7	0.1	1.8	3.6	241.5	306.7	343.3	165.0
		2158	2158	WEST MADHYA PRADESH	2012	6.2	0.0	0.0	0.9	3.1	48.2	439.2	341.2	194.3
		2159	2159	WEST MADHYA PRADESH	2013	1.7	31.1	8.5	2.8	0.4	263.7	485.1	432.6	98.9
		2160	2160	WEST MADHYA PRADESH	2014	25.6	34.4	4.6	1.4	1.4	30.6	337.4	211.0	192.6
		2161	2161	WEST MADHYA PRADESH	2015	40.2	6.4	53.5	13.3	2.0	154.1	428.2	276.6	55.6

114 rows × 20 columns

In [17]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

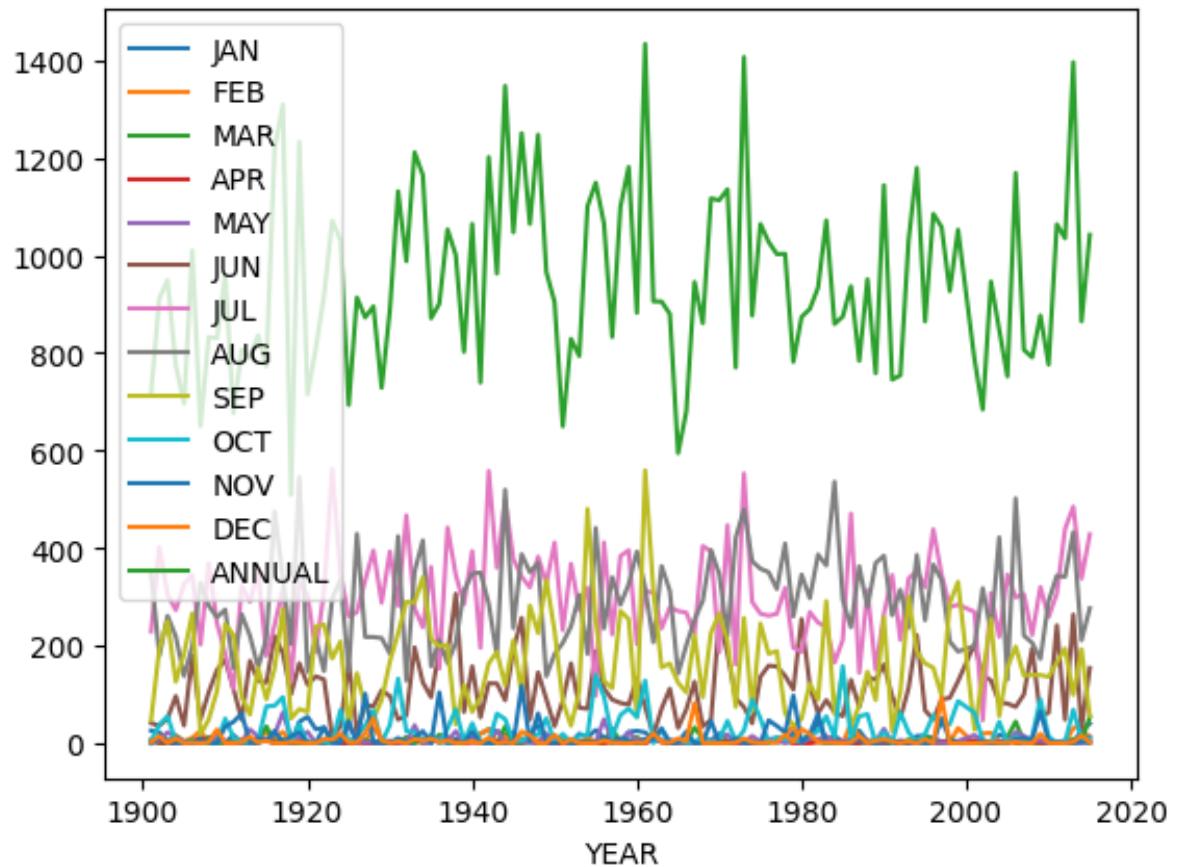
Out [17]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
2047	1901	25.8	5.8	5.8	2.8	2.1	41.2	228.9	349.9	47.9	5.6	0.0	2.4	530.4
2048	1902	22.1	8.4	0.0	2.0	5.9	35.9	401.9	179.4	194.1	37.9	10.0	14.2	530.4
2049	1903	5.3	0.0	0.0	0.0	22.3	50.6	304.9	261.1	250.2	55.1	0.0	0.0	530.4
2050	1904	3.2	15.5	14.8	0.0	12.0	96.6	273.0	218.6	125.9	3.3	1.8	9.6	530.4
2051	1905	3.5	4.4	1.1	0.8	3.0	36.1	326.3	137.6	183.5	0.3	0.0	0.0	530.4
...	530.4
2157	2011	0.0	1.7	0.1	1.8	3.6	241.5	306.7	343.3	165.0	0.2	0.0	0.0	530.4
2158	2012	6.2	0.0	0.0	0.9	3.1	48.2	439.2	341.2	194.3	2.1	0.0	0.0	530.4
2159	2013	1.7	31.1	8.5	2.8	0.4	263.7	485.1	432.6	98.9	68.7	0.3	2.4	530.4
2160	2014	25.6	34.4	4.6	1.4	1.4	30.6	337.4	211.0	192.6	7.0	3.0	15.8	530.4
2161	2015	40.2	6.4	53.5	13.3	2.0	154.1	428.2	276.6	55.6	11.0	0.3	1.0	530.4

114 rows × 14 columns

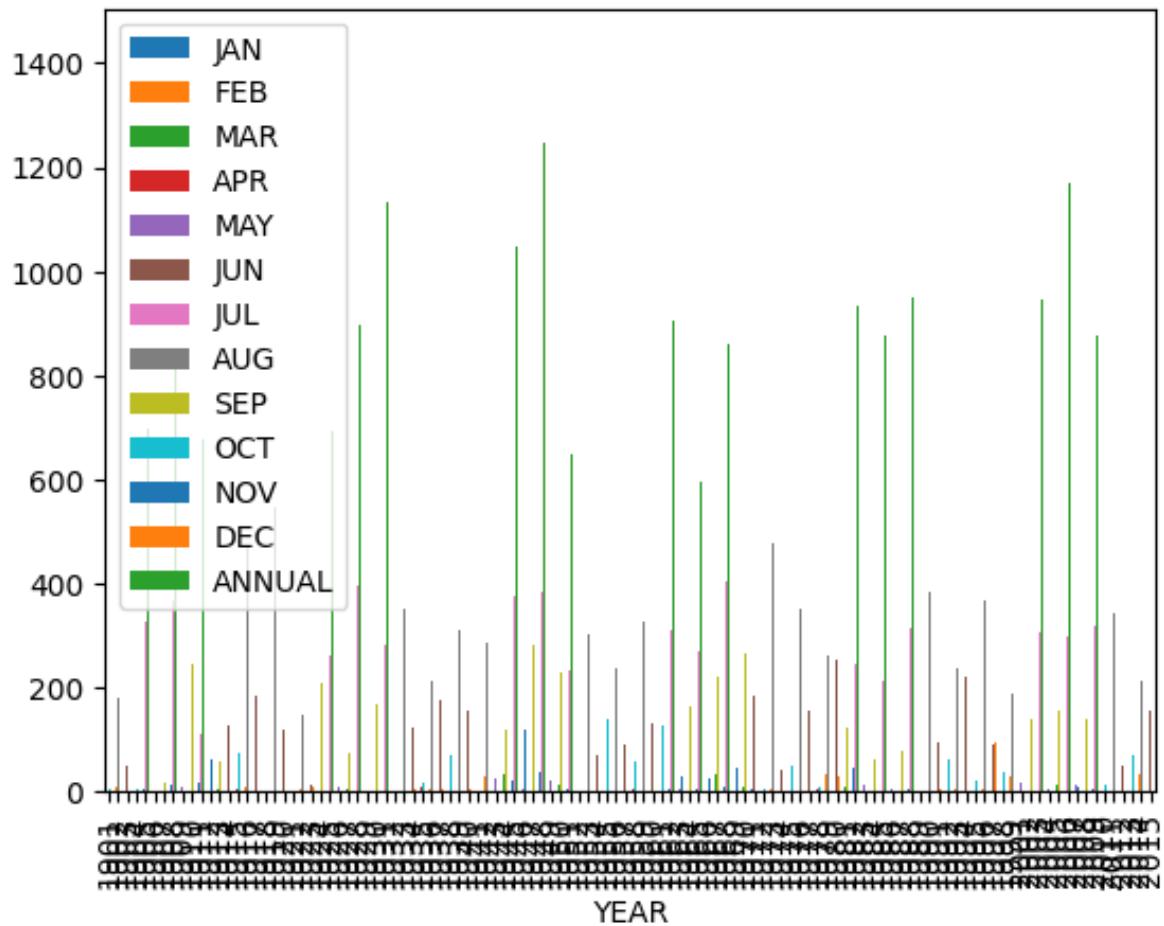
In [18]: `x.plot(x='YEAR')`

Out[18]: <Axes: xlabel='YEAR'>



In [19]: `x.plot.bar(x="YEAR")`

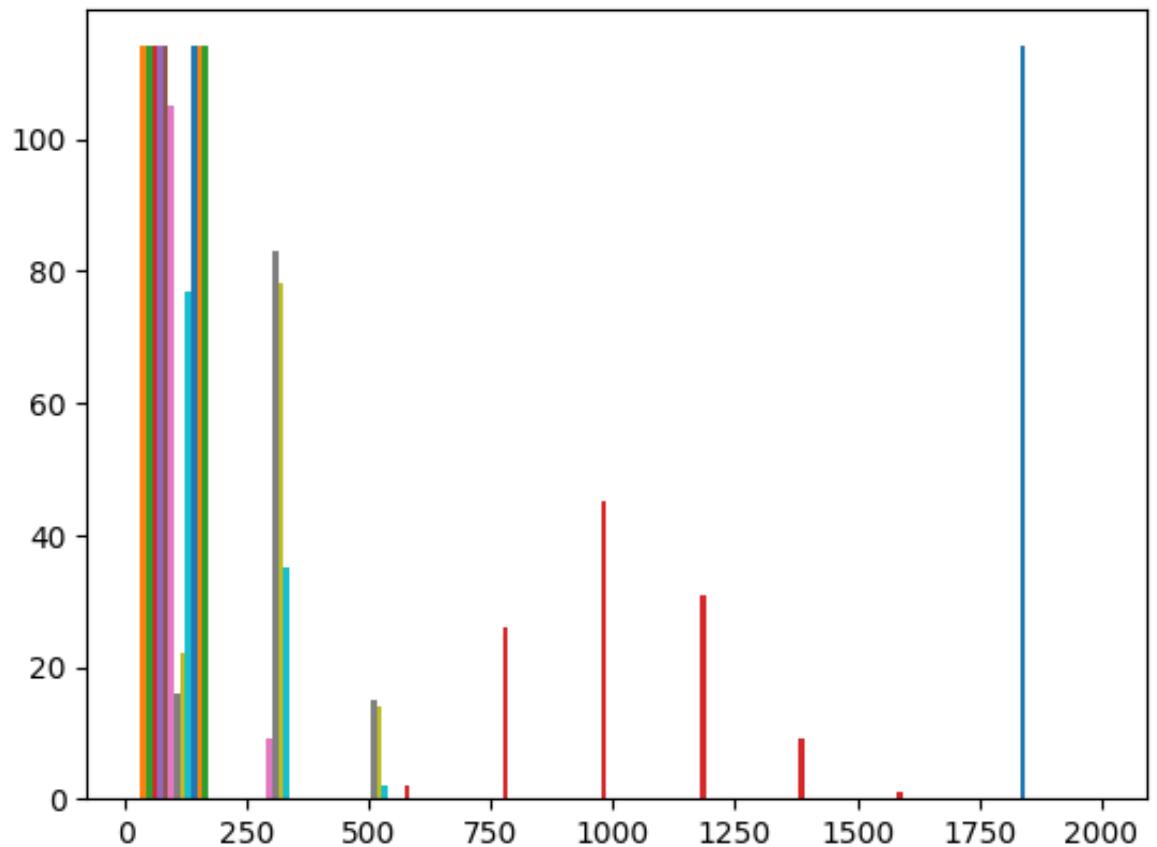
Out[19]: <Axes: xlabel='YEAR'>



In [20]: `plt.hist(x)`

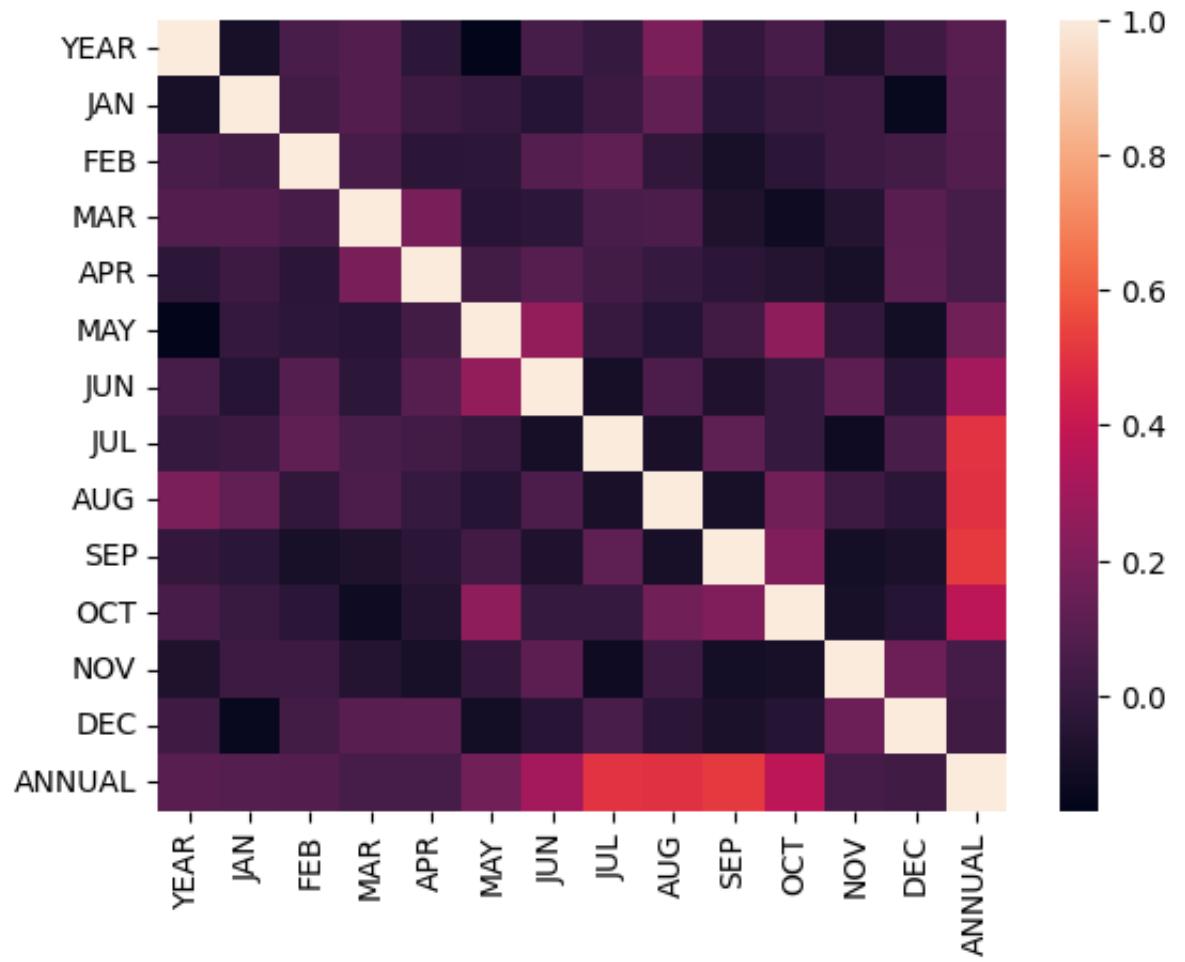
Out[20]: (array([[0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 11.
4.],
[114., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.],
[114., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.],
[114., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.],
[114., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.],
[114., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.],
[114., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.],
[114., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.],
[105., 9., 0., 0., 0., 0., 0., 0., 0., 0., 0.],
[16., 83., 15., 0., 0., 0., 0., 0., 0., 0., 0.],
[22., 78., 14., 0., 0., 0., 0., 0., 0., 0., 0.],
[77., 35., 2., 0., 0., 0., 0., 0., 0., 0., 0.],
[0.,
0.],

```
[114.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  
0.],  
[114.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  
0.],  
[114.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  
0.],  
[ 0.,  0.,  2.,  26.,  45.,  31.,  9.,  1.,  0.,  
0.]),  
array([ 0. ,  201.5,  403. ,  604.5,  806. , 1007.5, 1209. , 14  
10.5,  
    1612. , 1813.5, 2015. ]),  
<a list of 14 BarContainer objects>)
```



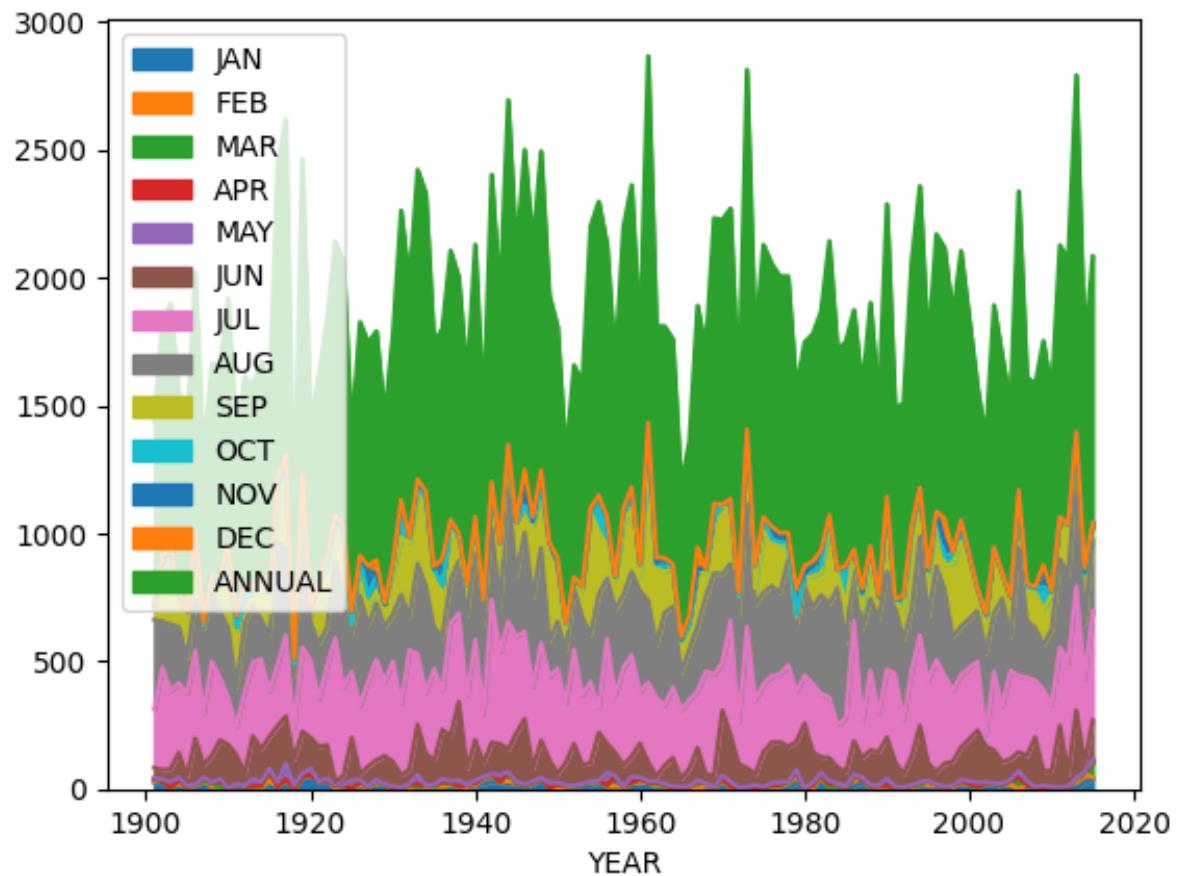
In [21]: `sns.heatmap(x.corr())`

Out [21]: <Axes: >



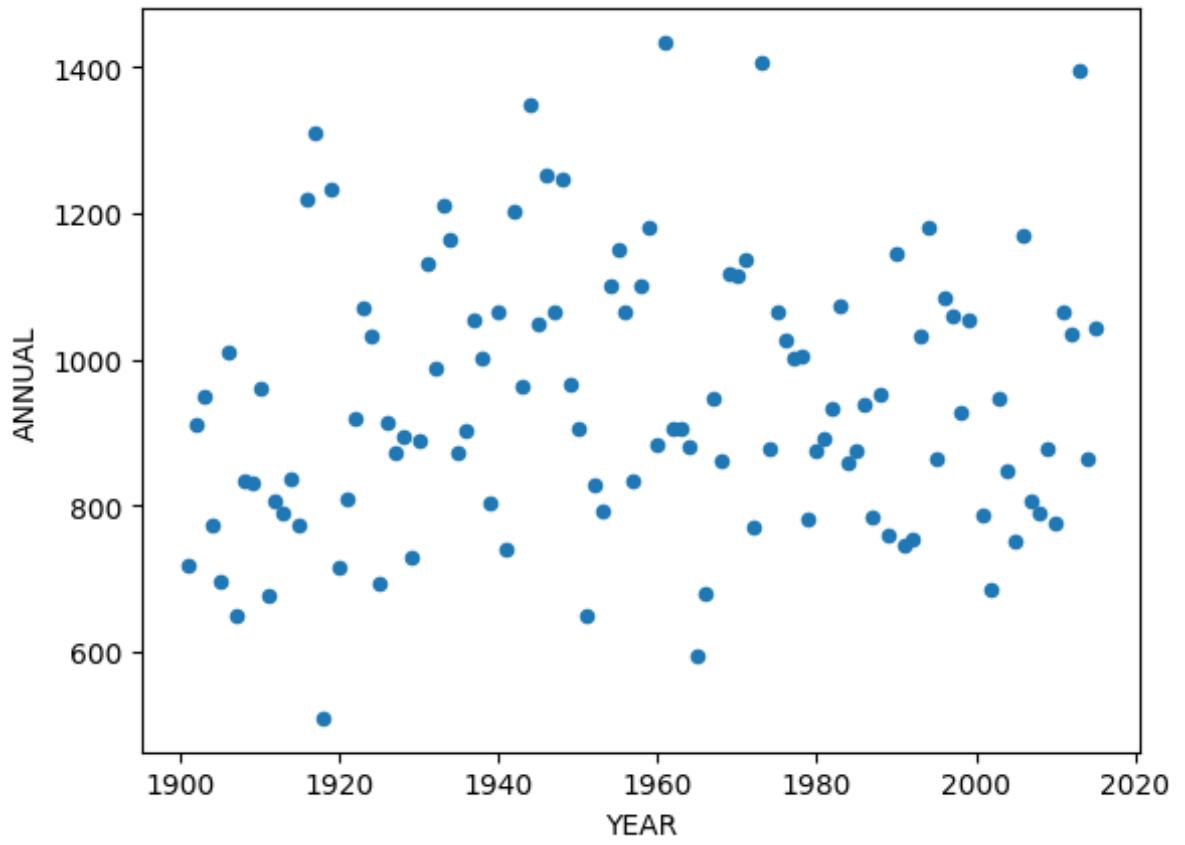
In [22]: `x.plot.area(x="YEAR")`

Out [22]: <Axes: xlabel='YEAR'>



```
In [23]: x.plot.scatter("YEAR","ANNUAL")
```

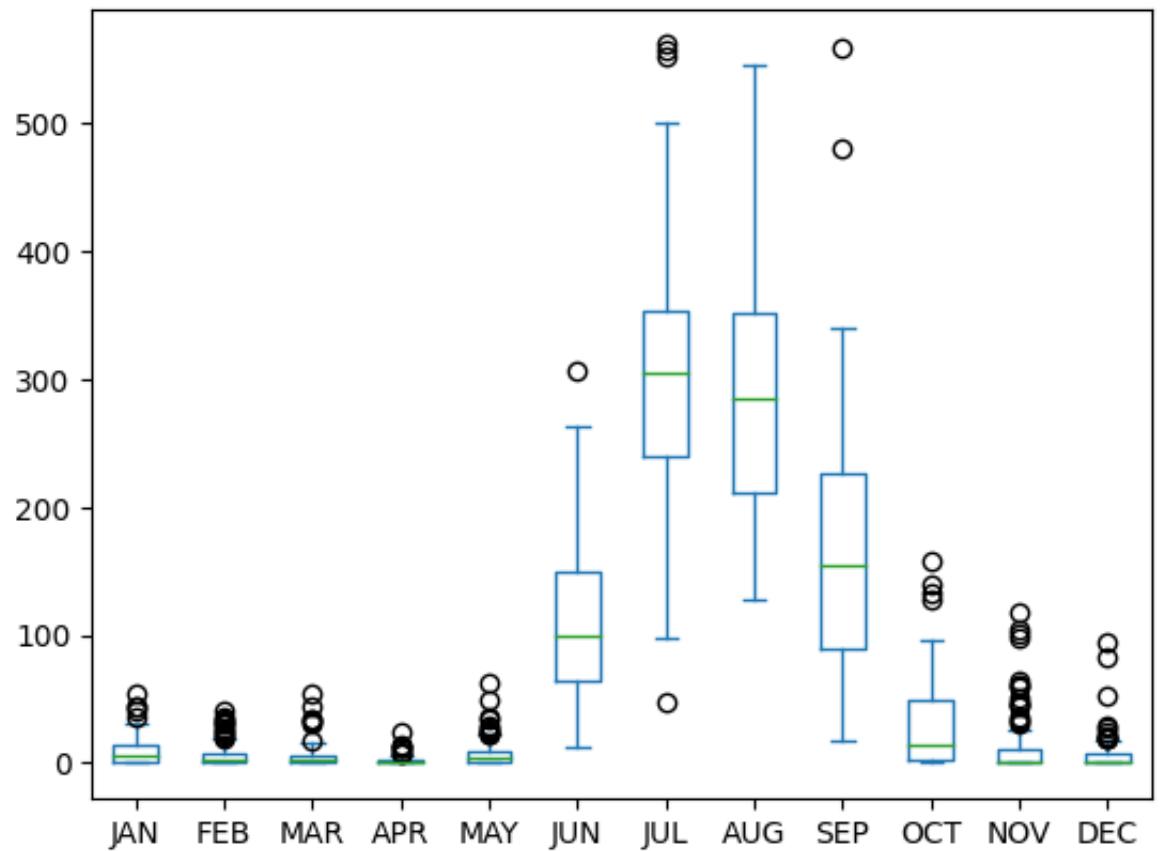
```
Out[23]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [24]: y=x.drop(["YEAR","ANNUAL"],axis=1)
```

In [25]: `y.plot.box()`

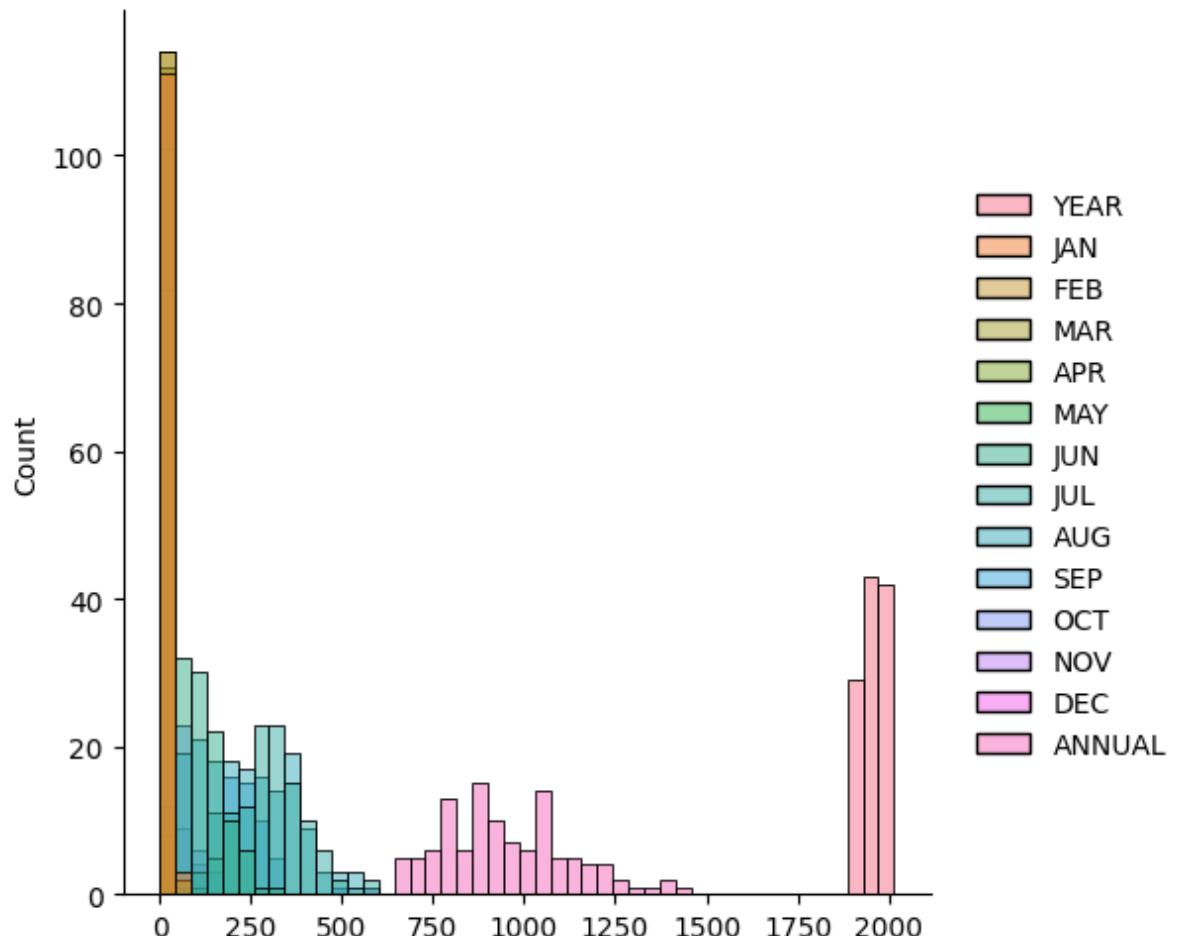
Out [25]: <Axes: >



In [26]: `sns.displot(x)`

```
C:\Users\Gokul Jana\AppData\Local\Programs\Python\Python311\Lib\site-packages\seaborn\axisgrid.py:118: UserWarning: The figure layout has changed to tight
  self._figure.tight_layout(*args, **kwargs)
```

Out [26]: <seaborn.axisgrid.FacetGrid at 0x26de17ced90>



TAMIL NADU

In [27]: `x=df[df["SUBDIVISION"]=="TAMIL NADU"]
x`

Out [27]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
3427	3427	TAMIL NADU	1901	24.5	39.1	21.7	36.0	74.0	41.8	49.3	67.9	191.1
3428	3428	TAMIL NADU	1902	67.2	9.8	25.1	21.9	84.7	39.3	55.1	113.8	98.6
3429	3429	TAMIL NADU	1903	19.3	7.8	1.7	18.2	128.5	58.5	72.6	115.0	210.4
3430	3430	TAMIL NADU	1904	35.2	0.1	0.7	19.5	121.9	34.9	89.0	40.4	85.7
3431	3431	TAMIL NADU	1905	6.5	7.5	17.2	64.8	83.7	49.8	39.0	101.8	73.5
...
3537	3537	TAMIL NADU	2011	4.3	11.2	8.0	91.5	33.4	56.0	45.5	128.9	76.0
3538	3538	TAMIL NADU	2012	3.0	0.1	2.5	35.5	41.9	30.1	46.5	98.0	84.9
3539	3539	TAMIL NADU	2013	3.9	30.9	30.0	20.3	42.0	54.6	42.7	110.7	113.5
3540	3540	TAMIL NADU	2014	7.4	6.1	8.1	8.3	139.1	47.8	50.6	117.7	98.9
3541	3541	TAMIL NADU	2015	8.3	2.3	21.7	108.8	112.4	62.4	43.5	81.6	98.4

115 rows × 20 columns

In [28]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out [28]:

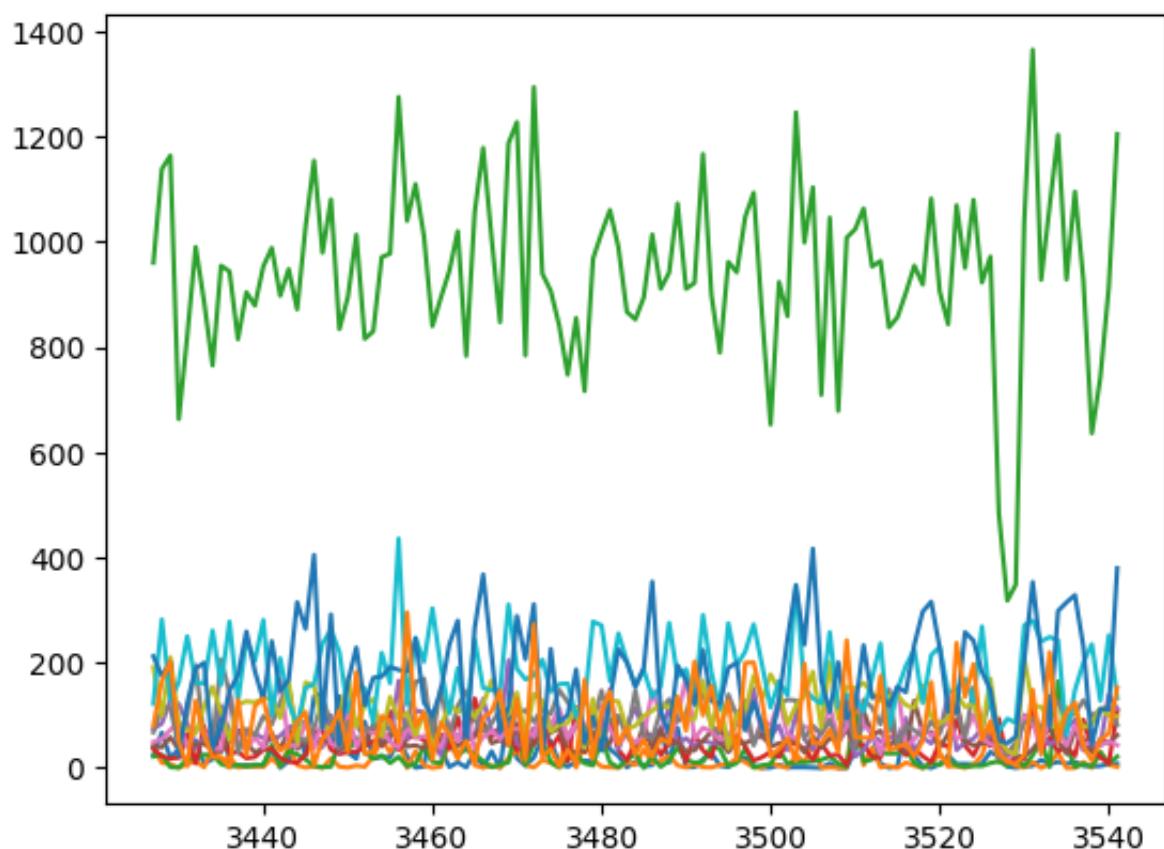
	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
3427	1901	24.5	39.1	21.7	36.0	74.0	41.8	49.3	67.9	191.1	122.3	212.3	80.4
3428	1902	67.2	9.8	25.1	21.9	84.7	39.3	55.1	113.8	98.6	282.2	174.9	165.8
3429	1903	19.3	7.8	1.7	18.2	128.5	58.5	72.6	115.0	210.4	128.1	200.5	203.2
3430	1904	35.2	0.1	0.7	19.5	121.9	34.9	89.0	40.4	85.7	163.2	23.6	49.1
3431	1905	6.5	7.5	17.2	64.8	83.7	49.8	39.0	101.8	73.5	250.4	123.7	3.2
...
3537	2011	4.3	11.2	8.0	91.5	33.4	56.0	45.5	128.9	76.0	200.4	230.5	41.0
3538	2012	3.0	0.1	2.5	35.5	41.9	30.1	46.5	98.0	84.9	235.2	44.5	14.0
3539	2013	3.9	30.9	30.0	20.3	42.0	54.6	42.7	110.7	113.5	127.9	112.3	53.2
3540	2014	7.4	6.1	8.1	8.3	139.1	47.8	50.6	117.7	98.9	252.2	110.8	66.0
3541	2015	8.3	2.3	21.7	108.8	112.4	62.4	43.5	81.6	98.4	132.6	379.8	152.8

115 rows × 14 columns

In [29]: `y=x.drop("YEAR",axis=1)`

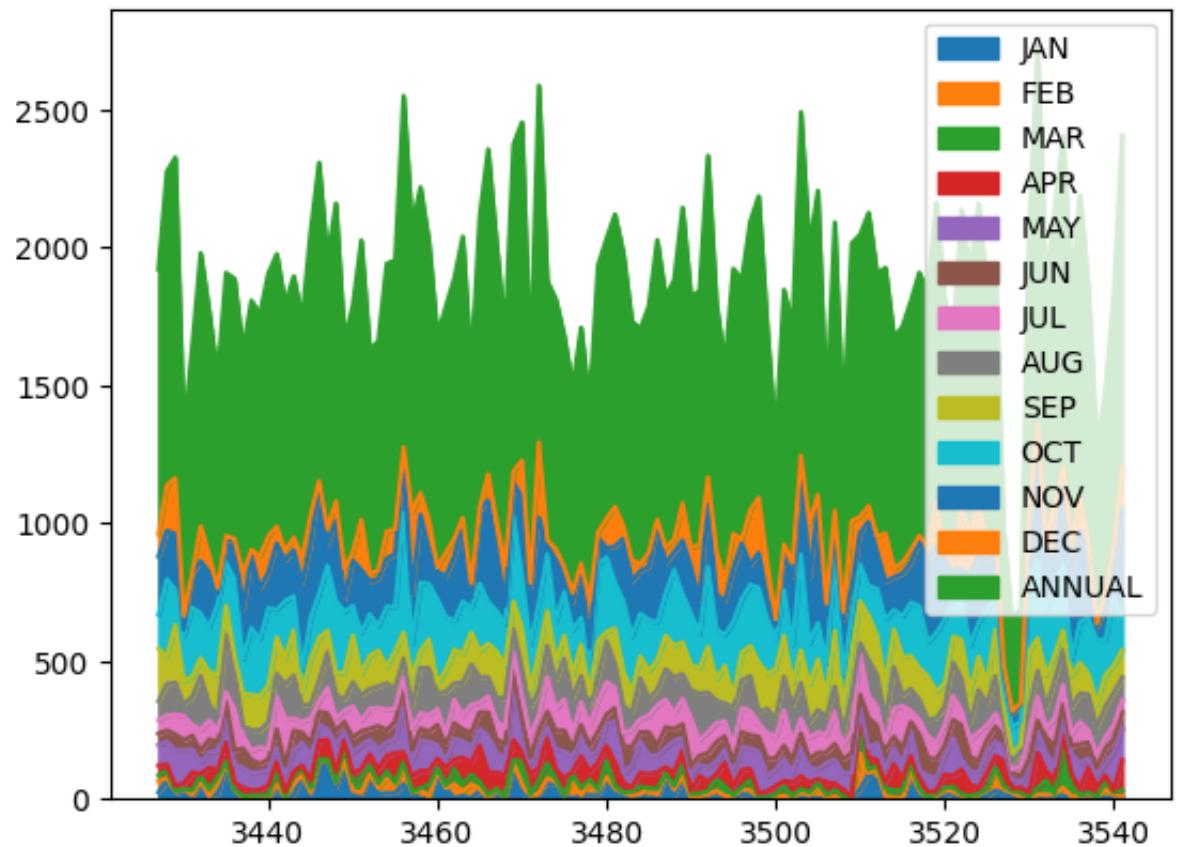
In [30]: `plt.plot(y)`

Out[30]: [`<matplotlib.lines.Line2D at 0x26de1e9add0>`,
`<matplotlib.lines.Line2D at 0x26de201a050>`,
`<matplotlib.lines.Line2D at 0x26de201b950>`,
`<matplotlib.lines.Line2D at 0x26de201bc50>`,
`<matplotlib.lines.Line2D at 0x26de201bed0>`,
`<matplotlib.lines.Line2D at 0x26de2030310>`,
`<matplotlib.lines.Line2D at 0x26de2030910>`,
`<matplotlib.lines.Line2D at 0x26de2030b90>`,
`<matplotlib.lines.Line2D at 0x26de201bfd0>`,
`<matplotlib.lines.Line2D at 0x26de2030490>`,
`<matplotlib.lines.Line2D at 0x26de2031750>`,
`<matplotlib.lines.Line2D at 0x26de2031b10>`,
`<matplotlib.lines.Line2D at 0x26de2031ed0>`]



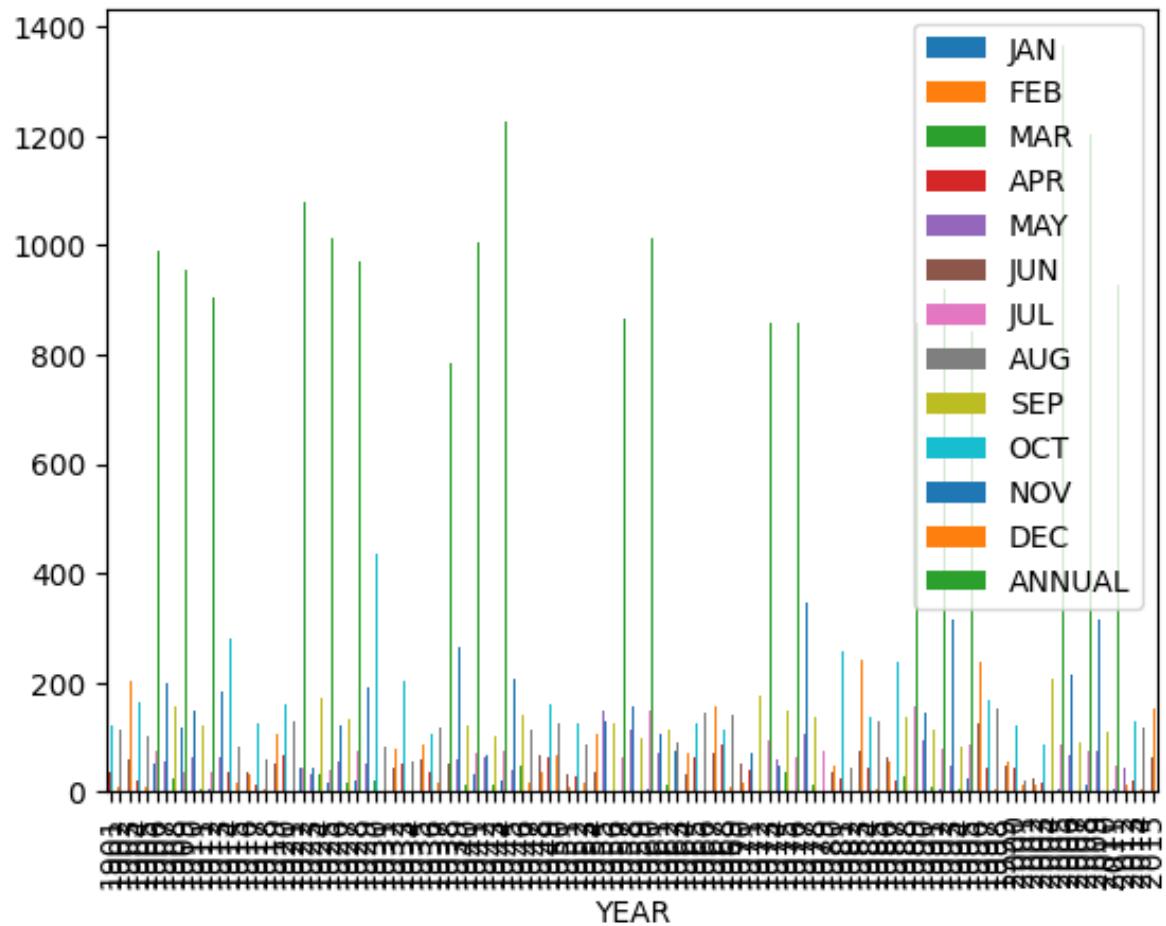
```
In [31]: y.plot.area()
```

```
Out[31]: <Axes: >
```



In [32]: `x.plot.bar(x="YEAR")`

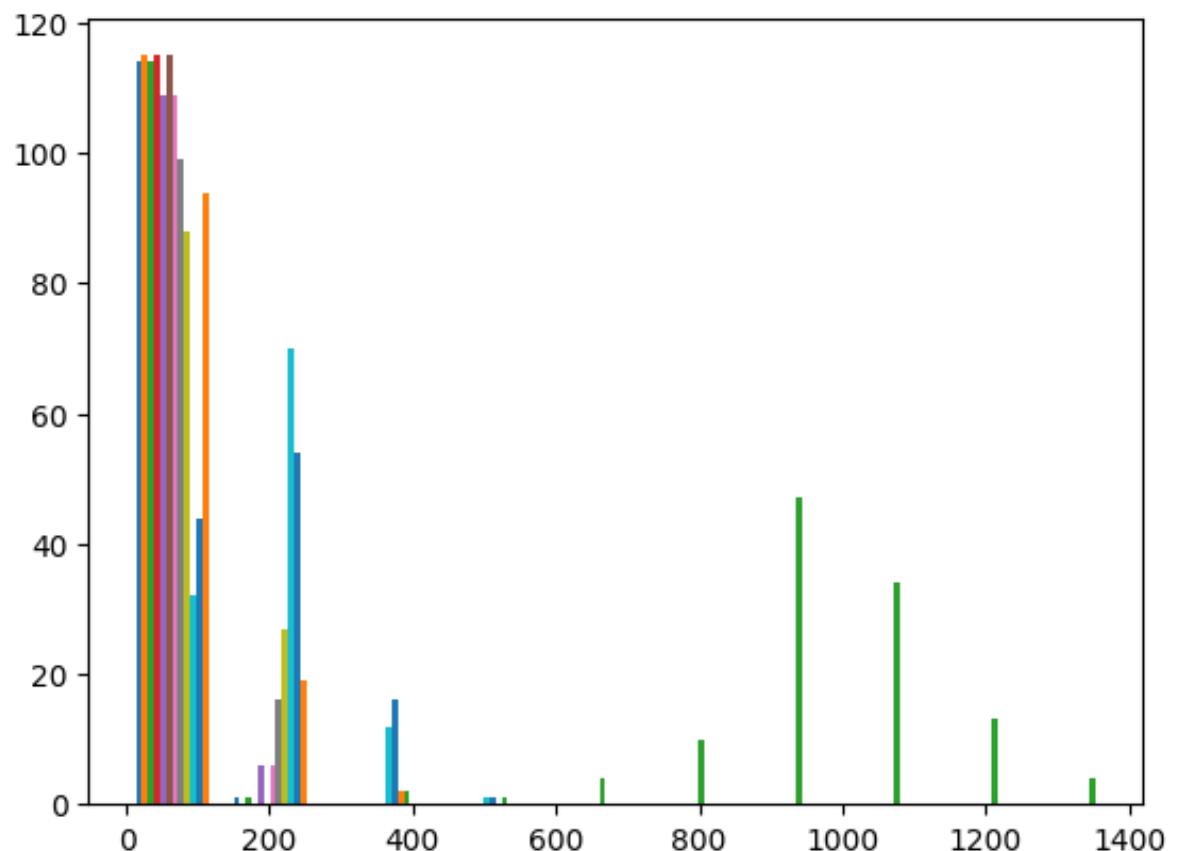
Out [32]: <Axes: xlabel='YEAR'>



In [33]: `plt.hist(y)`

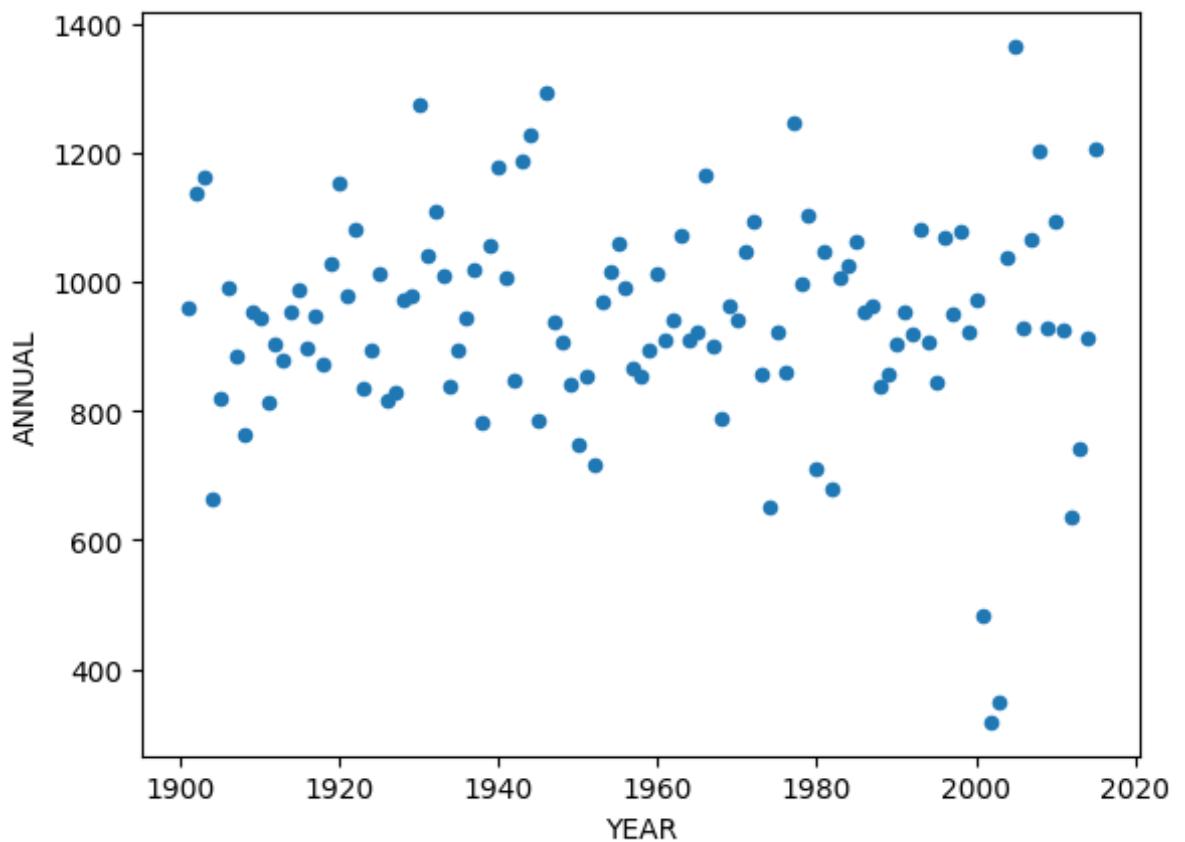
Out [33]: `(array([[114., 1., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[114., 1., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[109., 6., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[109., 6., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[99., 16., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[88., 27., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[32., 70., 12., 1., 0., 0., 0., 0., 0., 0.,
0.],
0.],`

```
[ 44.,  54.,  16.,   1.,   0.,   0.,   0.,   0.,   0.,
0.], [ 94.,  19.,   2.,   0.,   0.,   0.,   0.,   0.,   0.,
0.], [  0.,   0.,   2.,   1.,   4.,  10.,  47.,  34.,  13.,
4.]), array([  0. ,  136.53, 273.06, 409.59, 546.12, 682.65, 81
9.18,
 955.71, 1092.24, 1228.77, 1365.3 ]),  
<a list of 13 BarContainer objects>)
```



```
In [34]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

```
Out[34]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



EAST RAJASTHAN

In [35]: `x=df[df["SUBDIVISION"]=="EAST RAJASTHAN"]
x`

Out [35]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1932	1932	EAST RAJASTHAN	1901	21.6	8.9	2.9	0.7	5.0	15.0	164.8	175.6	7.5
1933	1933	EAST RAJASTHAN	1902	4.1	0.7	0.0	1.8	9.9	34.6	247.6	116.7	145.6
1934	1934	EAST RAJASTHAN	1903	1.9	0.7	1.3	0.1	12.9	15.6	238.2	229.1	168.5
1935	1935	EAST RAJASTHAN	1904	4.3	5.5	21.7	0.2	27.5	49.9	289.7	223.5	50.2
1936	1936	EAST RAJASTHAN	1905	4.1	8.8	3.2	1.6	2.0	14.4	130.5	30.9	83.8
...
2042	2042	EAST RAJASTHAN	2011	0.0	11.2	0.2	0.5	5.1	140.9	193.6	284.1	166.4
2043	2043	EAST RAJASTHAN	2012	1.9	0.0	0.0	3.6	9.5	11.2	170.5	365.0	131.3
2044	2044	EAST RAJASTHAN	2013	1.4	21.7	0.4	3.2	1.0	90.6	319.0	278.5	88.0
2045	2045	EAST RAJASTHAN	2014	28.4	10.0	6.4	7.3	8.4	23.5	197.1	261.0	136.9
2046	2046	EAST RAJASTHAN	2015	12.1	0.1	55.9	15.9	3.5	96.4	297.6	142.8	20.1

115 rows × 20 columns

In [36]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out [36]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1932	1901	21.6	8.9	2.9	0.7	5.0	15.0	164.8	175.6	7.5	9.8	0.0	0.8	21.6
1933	1902	4.1	0.7	0.0	1.8	9.9	34.6	247.6	116.7	145.6	14.4	0.0	2.8	116.7
1934	1903	1.9	0.7	1.3	0.1	12.9	15.6	238.2	229.1	168.5	17.8	0.0	0.0	168.5
1935	1904	4.3	5.5	21.7	0.2	27.5	49.9	289.7	223.5	50.2	1.5	5.8	14.7	223.5
1936	1905	4.1	8.8	3.2	1.6	2.0	14.4	130.5	30.9	83.8	0.0	0.0	0.6	30.9
...
2042	2011	0.0	11.2	0.2	0.5	5.1	140.9	193.6	284.1	166.4	0.0	0.0	0.0	193.6
2043	2012	1.9	0.0	0.0	3.6	9.5	11.2	170.5	365.0	131.3	0.5	0.0	0.1	170.5
2044	2013	1.4	21.7	0.4	3.2	1.0	90.6	319.0	278.5	88.0	30.6	1.3	0.3	319.0
2045	2014	28.4	10.0	6.4	7.3	8.4	23.5	197.1	261.0	136.9	3.2	0.0	1.1	197.1
2046	2015	12.1	0.1	55.9	15.9	3.5	96.4	297.6	142.8	20.1	5.0	0.5	0.8	142.8

115 rows × 14 columns

In [37]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

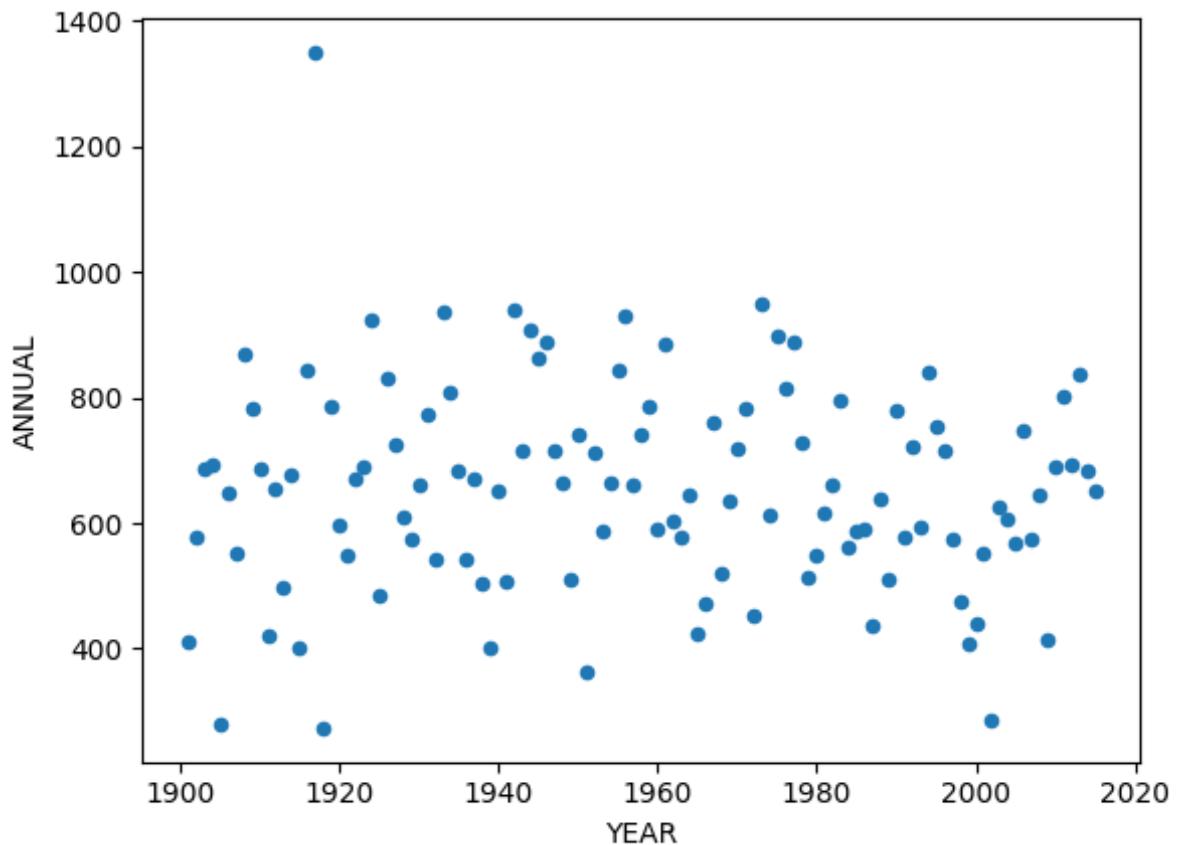
Out [37]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
1932	21.6	8.9	2.9	0.7	5.0	15.0	164.8	175.6	7.5	9.8	0.0	0.8	21.6	
1933	4.1	0.7	0.0	1.8	9.9	34.6	247.6	116.7	145.6	14.4	0.0	2.8	116.7	
1934	1.9	0.7	1.3	0.1	12.9	15.6	238.2	229.1	168.5	17.8	0.0	0.0	168.5	
1935	4.3	5.5	21.7	0.2	27.5	49.9	289.7	223.5	50.2	1.5	5.8	14.7	223.5	
1936	4.1	8.8	3.2	1.6	2.0	14.4	130.5	30.9	83.8	0.0	0.0	0.6	30.9	
...	
2042	0.0	11.2	0.2	0.5	5.1	140.9	193.6	284.1	166.4	0.0	0.0	0.0	0.0	193.6
2043	1.9	0.0	0.0	3.6	9.5	11.2	170.5	365.0	131.3	0.5	0.0	0.1	0.0	170.5
2044	1.4	21.7	0.4	3.2	1.0	90.6	319.0	278.5	88.0	30.6	1.3	0.3	0.0	319.0
2045	28.4	10.0	6.4	7.3	8.4	23.5	197.1	261.0	136.9	3.2	0.0	1.1	197.1	
2046	12.1	0.1	55.9	15.9	3.5	96.4	297.6	142.8	20.1	5.0	0.5	0.8	142.8	

115 rows × 12 columns

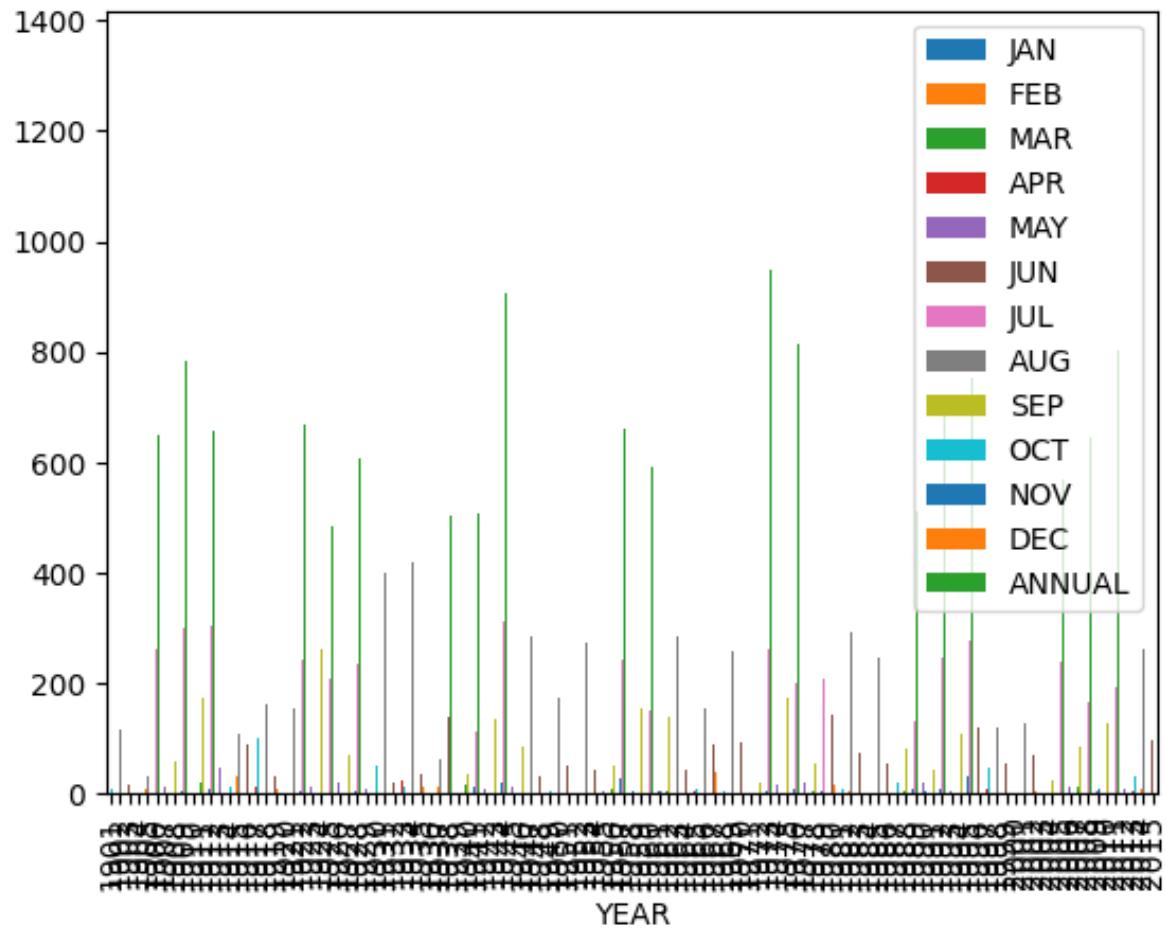
```
In [38]: x.plot.scatter(x="YEAR", y="ANNUAL")
```

```
Out[38]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



In [39]: `x.plot.bar(x="YEAR")`

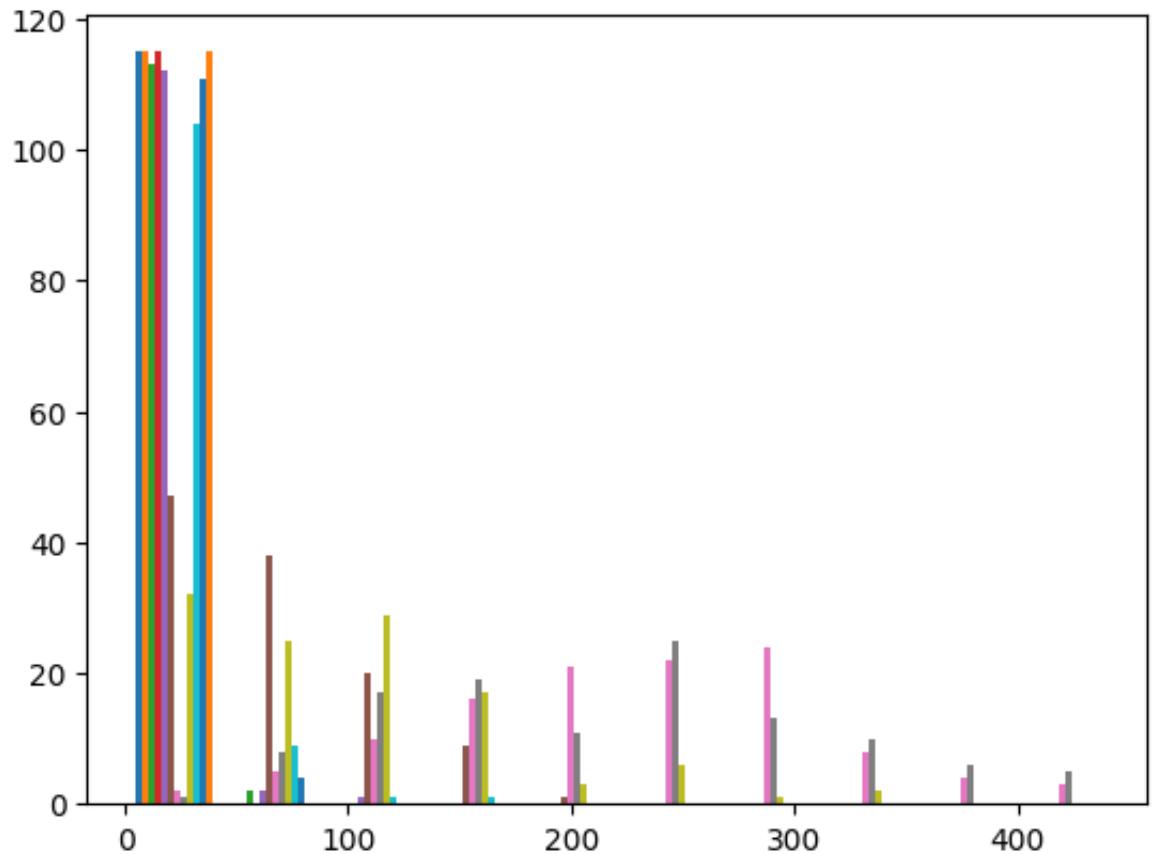
Out [39]: <Axes: xlabel='YEAR'>



In [40]: `plt.hist(y)`

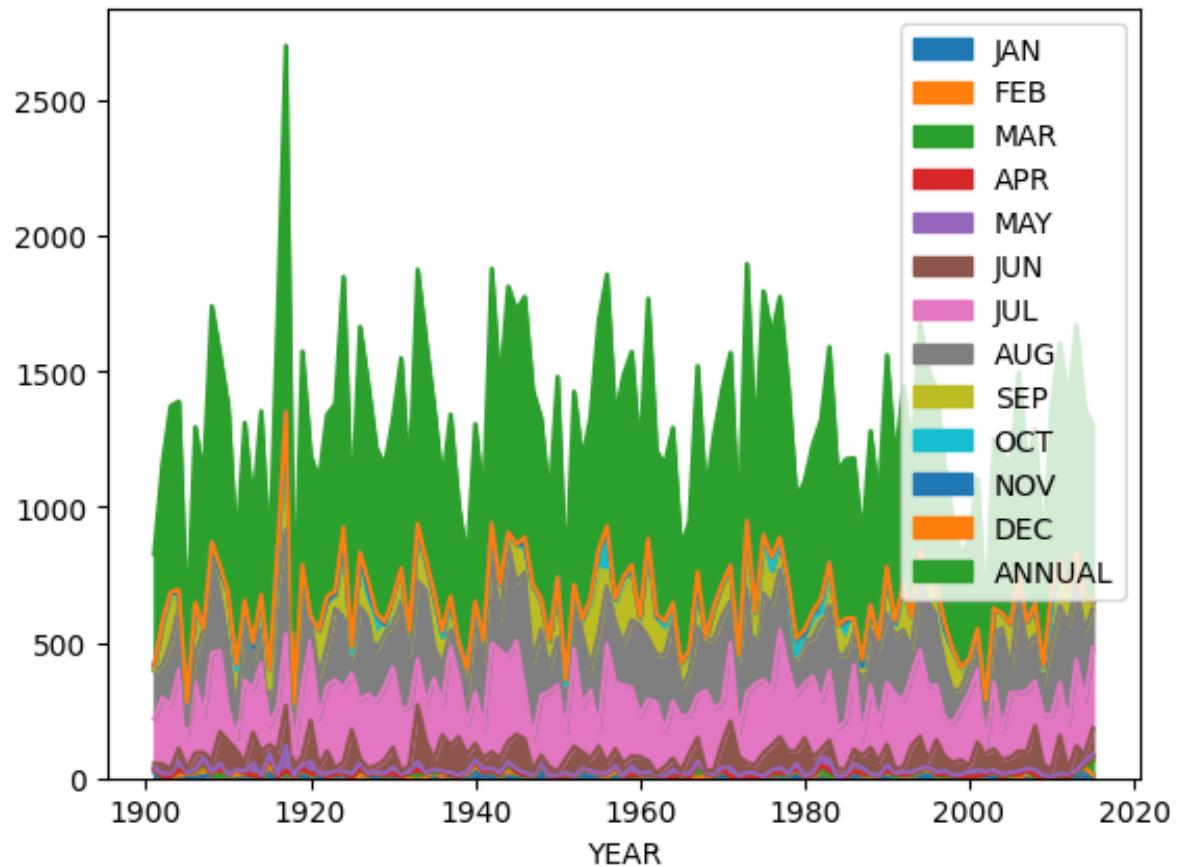
Out [40]: `(array([[115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[113., 2., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[112., 2., 1., 0., 0., 0., 0., 0., 0., 0.,
0.],
[47., 38., 20., 9., 1., 0., 0., 0., 0., 0.,
0.],
[2., 5., 10., 16., 21., 22., 24., 8., 4.,
3.],
[1., 8., 17., 19., 11., 25., 13., 10., 6.,
5.],
[32., 25., 29., 17., 3., 6., 1., 2., 0.,
0.],
[104., 9., 1., 1., 0., 0., 0., 0., 0.,
0.],`

```
0.],  
      [111.,   4.,    0.,    0.,    0.,    0.,    0.,    0.,    0.,  
0.],  
      [115.,   0.,    0.,    0.,    0.,    0.,    0.,    0.,    0.,  
0.]),  
array([  0. ,   44.06,   88.12,  132.18,  176.24,  220.3 ,  264.36,  30  
8.42,  
       352.48,  396.54,  440.6 ]),  
<a list of 12 BarContainer objects>)
```



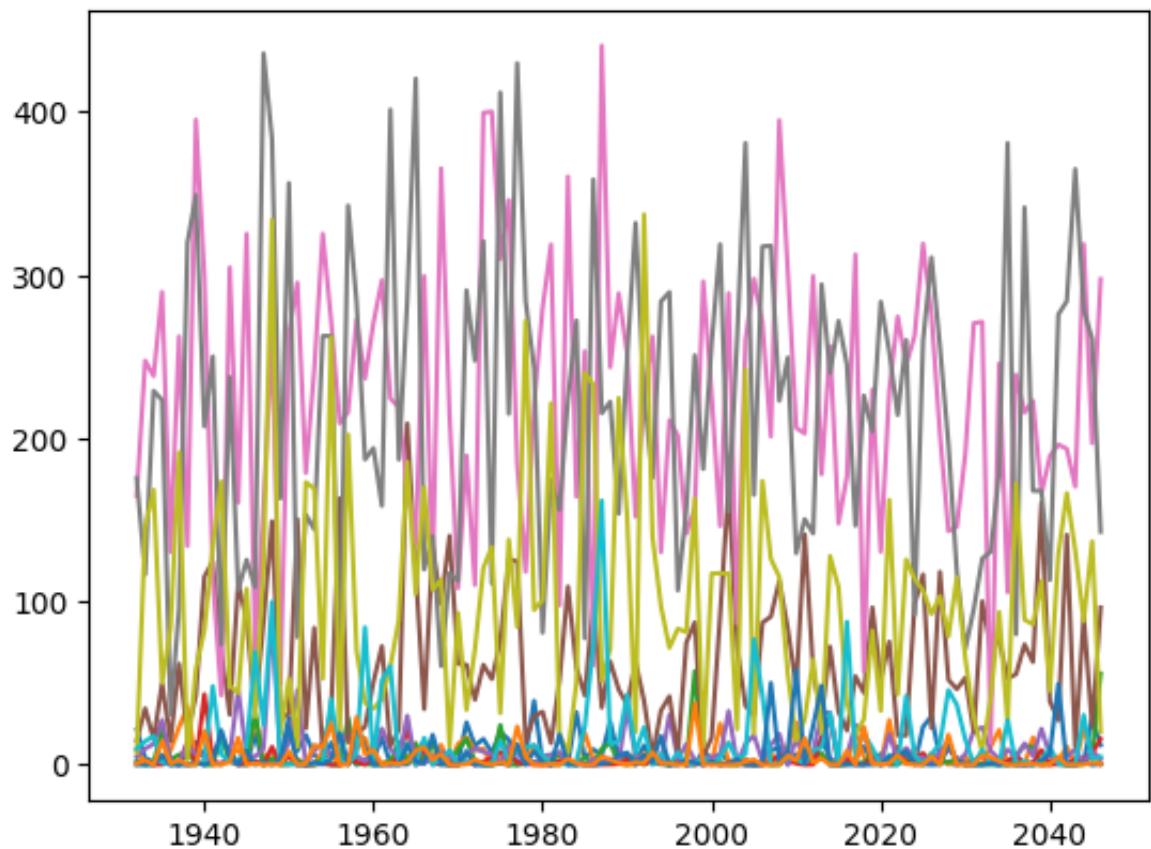
In [41]: `x.plot.area(x="YEAR")`

Out [41]: <Axes: xlabel='YEAR'>



```
In [42]: plt.plot(y)
```

```
Out[42]: [<matplotlib.lines.Line2D at 0x26de5f7add0>,
<matplotlib.lines.Line2D at 0x26de5fb40d0>,
<matplotlib.lines.Line2D at 0x26de5fb4450>,
<matplotlib.lines.Line2D at 0x26de5fb4850>,
<matplotlib.lines.Line2D at 0x26de5fb4b90>,
<matplotlib.lines.Line2D at 0x26de5fb50d0>,
<matplotlib.lines.Line2D at 0x26de5fb5350>,
<matplotlib.lines.Line2D at 0x26de5fb58d0>,
<matplotlib.lines.Line2D at 0x26de5fb4c90>,
<matplotlib.lines.Line2D at 0x26de5fb5050>,
<matplotlib.lines.Line2D at 0x26de5fb6310>,
<matplotlib.lines.Line2D at 0x26de5fb67d0>]
```



COASTAL KARNATAKA

In [43]: `x=df[df["SUBDIVISION"]=="COASTAL KARNATAKA"]
x`

Out [43]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN	STDEV	MIN	MAX
3542	3542	COASTAL KARNATAKA	1901	1.8	0.6	10.7	52.4	81.6	960.9	991.2	606.4	100.1	100.1	100.1	100.1	100.1	100.1	100.1	100.1
3543	3543	COASTAL KARNATAKA	1902	3.2	0.3	4.9	10.2	54.6	698.4	1401.6	454.2	77.7	77.7	77.7	77.7	77.7	77.7	77.7	77.7
3544	3544	COASTAL KARNATAKA	1903	0.7	0.0	0.0	4.1	202.8	536.5	1405.5	593.8	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3
3545	3545	COASTAL KARNATAKA	1904	2.4	0.0	4.8	23.7	93.2	1108.2	1070.0	465.6	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
3546	3546	COASTAL KARNATAKA	1905	0.0	0.2	0.0	6.4	83.1	767.3	777.3	586.9	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
...
3651	3651	COASTAL KARNATAKA	2010	14.4	0.4	3.5	62.2	80.2	682.7	1200.2	637.5	44.4	44.4	44.4	44.4	44.4	44.4	44.4	44.4
3652	3652	COASTAL KARNATAKA	2011	4.8	3.8	8.7	66.1	49.3	1018.4	1080.5	861.3	55.5	55.5	55.5	55.5	55.5	55.5	55.5	55.5
3654	3654	COASTAL KARNATAKA	2013	2.4	19.6	19.0	28.5	100.4	1153.0	1515.3	680.2	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3
3655	3655	COASTAL KARNATAKA	2014	0.0	0.3	1.9	40.5	181.9	507.0	1155.4	1121.0	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3
3656	3656	COASTAL KARNATAKA	2015	1.4	1.0	32.3	72.2	150.3	735.3	930.9	575.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2	22.2

114 rows × 20 columns

In [44]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out [44]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
3542	1901	1.8	0.6	10.7	52.4	81.6	960.9	991.2	606.4	108.0	120.5	104.9	17.8
3543	1902	3.2	0.3	4.9	10.2	54.6	698.4	1401.6	454.2	708.4	180.4	50.8	132.2
3544	1903	0.7	0.0	0.0	4.1	202.8	536.5	1405.5	593.8	304.4	185.0	79.3	5.3
3545	1904	2.4	0.0	4.8	23.7	93.2	1108.2	1070.0	465.6	245.3	127.2	0.7	0.0
3546	1905	0.0	0.2	0.0	6.4	83.1	767.3	777.3	586.9	172.9	222.2	36.1	0.0
...
3651	2010	14.4	0.4	3.5	62.2	80.2	682.7	1200.2	637.5	468.4	294.7	231.5	11.0
3652	2011	4.8	3.8	8.7	66.1	49.3	1018.4	1080.5	861.3	545.2	178.8	81.5	10.2
3654	2013	2.4	19.6	19.0	28.5	100.4	1153.0	1515.3	680.2	379.1	265.1	56.9	10.0
3655	2014	0.0	0.3	1.9	40.5	181.9	507.0	1155.4	1121.0	379.3	226.4	40.0	30.8
3656	2015	1.4	1.0	32.3	72.2	150.3	735.3	930.9	575.2	260.3	208.5	124.2	14.3

114 rows × 14 columns

In [45]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

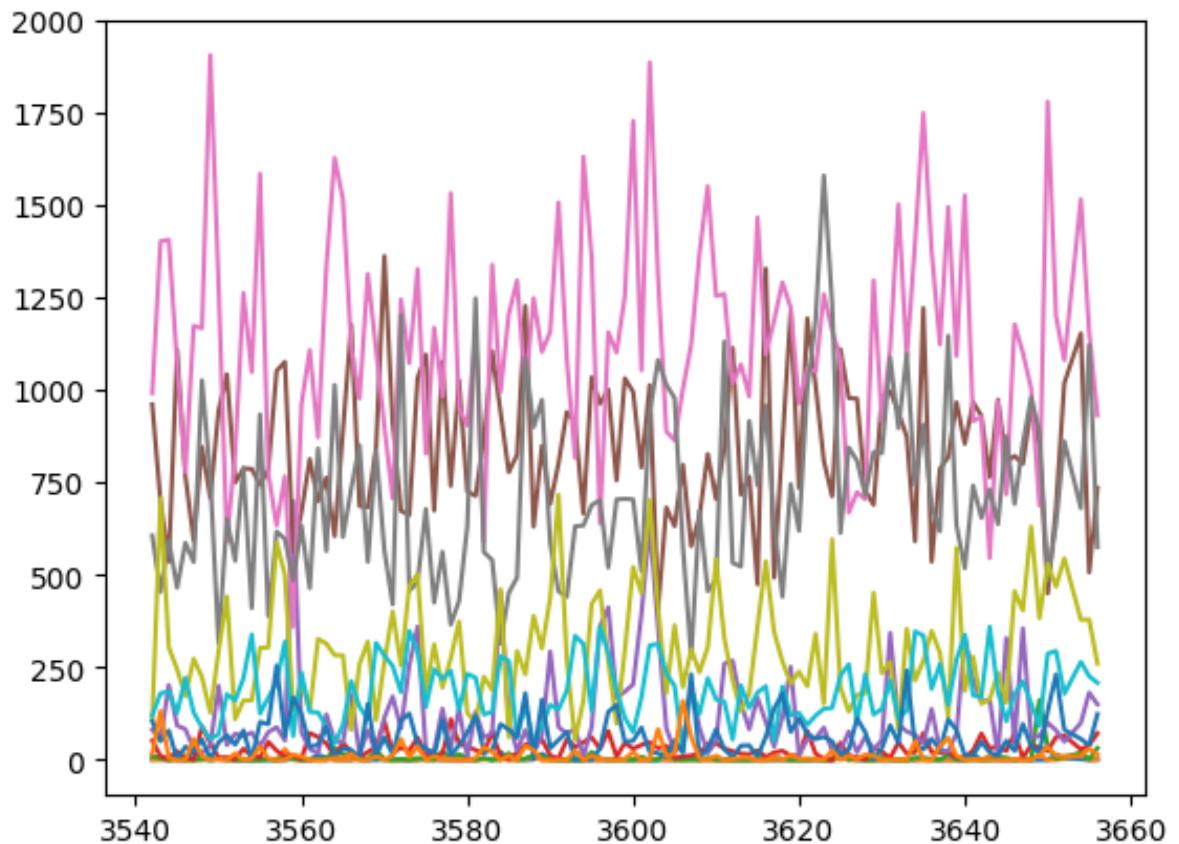
Out [45]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
3542	1.8	0.6	10.7	52.4	81.6	960.9	991.2	606.4	108.0	120.5	104.9	17.8
3543	3.2	0.3	4.9	10.2	54.6	698.4	1401.6	454.2	708.4	180.4	50.8	132.2
3544	0.7	0.0	0.0	4.1	202.8	536.5	1405.5	593.8	304.4	185.0	79.3	5.3
3545	2.4	0.0	4.8	23.7	93.2	1108.2	1070.0	465.6	245.3	127.2	0.7	0.0
3546	0.0	0.2	0.0	6.4	83.1	767.3	777.3	586.9	172.9	222.2	36.1	0.0
...
3651	14.4	0.4	3.5	62.2	80.2	682.7	1200.2	637.5	468.4	294.7	231.5	11.0
3652	4.8	3.8	8.7	66.1	49.3	1018.4	1080.5	861.3	545.2	178.8	81.5	10.2
3654	2.4	19.6	19.0	28.5	100.4	1153.0	1515.3	680.2	379.1	265.1	56.9	10.0
3655	0.0	0.3	1.9	40.5	181.9	507.0	1155.4	1121.0	379.3	226.4	40.0	30.8
3656	1.4	1.0	32.3	72.2	150.3	735.3	930.9	575.2	260.3	208.5	124.2	14.3

114 rows × 12 columns

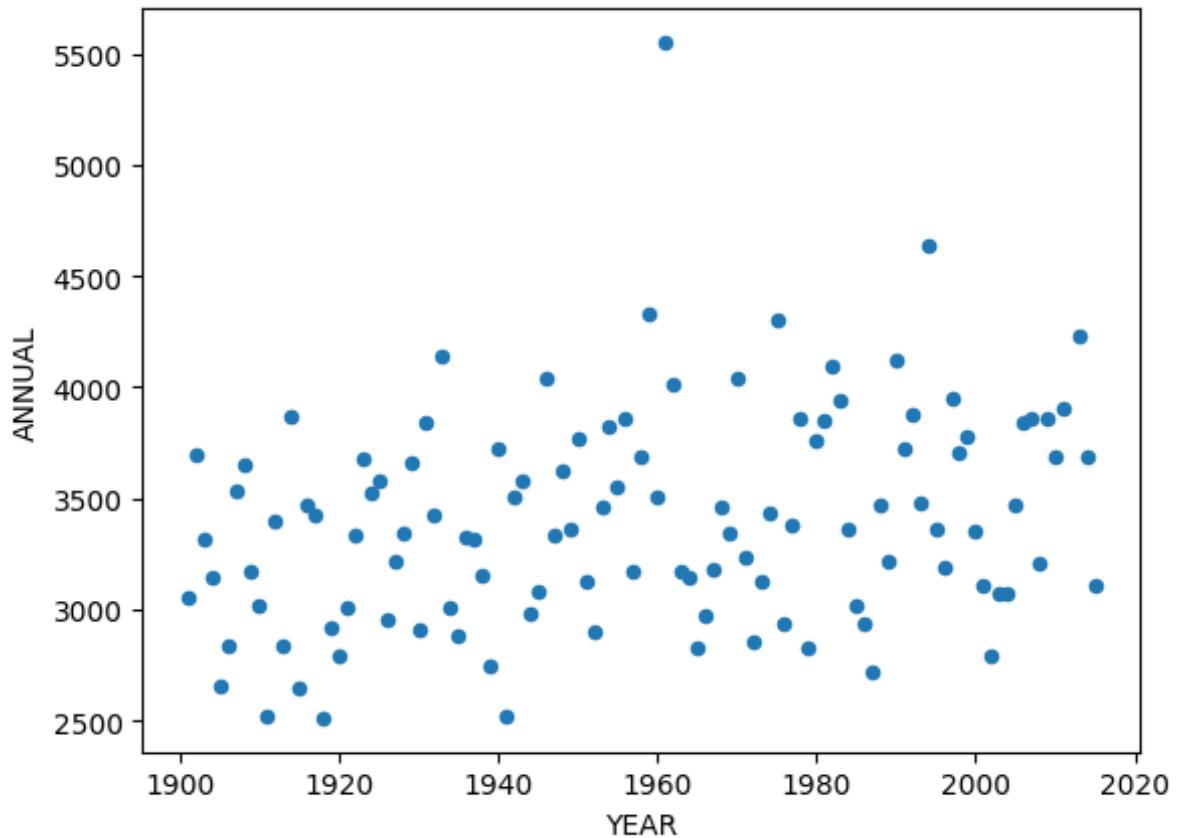
In [46]: `plt.plot(y)`

Out[46]: [`<matplotlib.lines.Line2D at 0x26de5fec2d0>`,
`<matplotlib.lines.Line2D at 0x26de63a72d0>`,
`<matplotlib.lines.Line2D at 0x26de63a75d0>`,
`<matplotlib.lines.Line2D at 0x26de63a7810>`,
`<matplotlib.lines.Line2D at 0x26de63a7c50>`,
`<matplotlib.lines.Line2D at 0x26de63b0090>`,
`<matplotlib.lines.Line2D at 0x26de63b0610>`,
`<matplotlib.lines.Line2D at 0x26de63b08d0>`,
`<matplotlib.lines.Line2D at 0x26de63a7d50>`,
`<matplotlib.lines.Line2D at 0x26de63b1210>`,
`<matplotlib.lines.Line2D at 0x26de6391d50>`,
`<matplotlib.lines.Line2D at 0x26de63890d0>`]



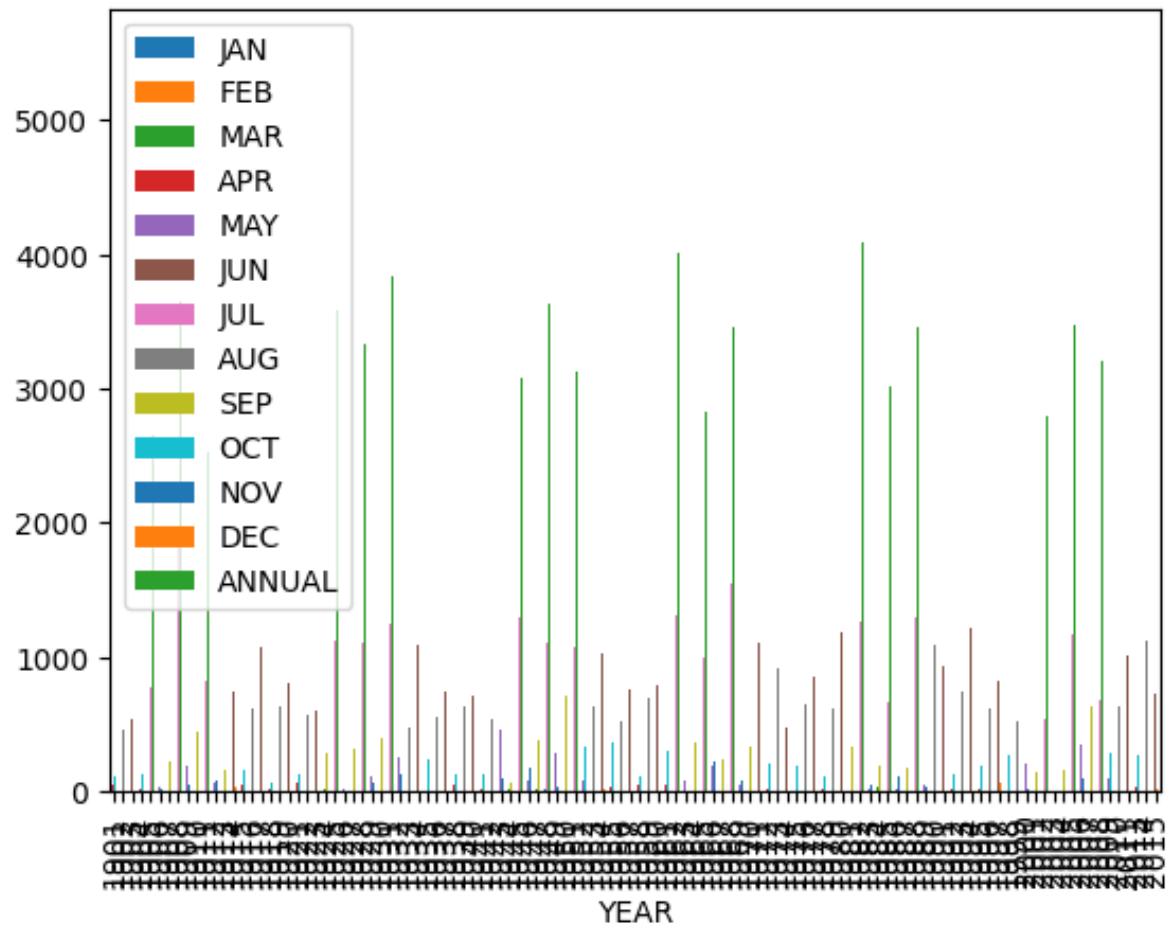
```
In [47]: x.plot.scatter(x="YEAR", y="ANNUAL")
```

```
Out[47]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [48]: x.plot.bar(x="YEAR")
```

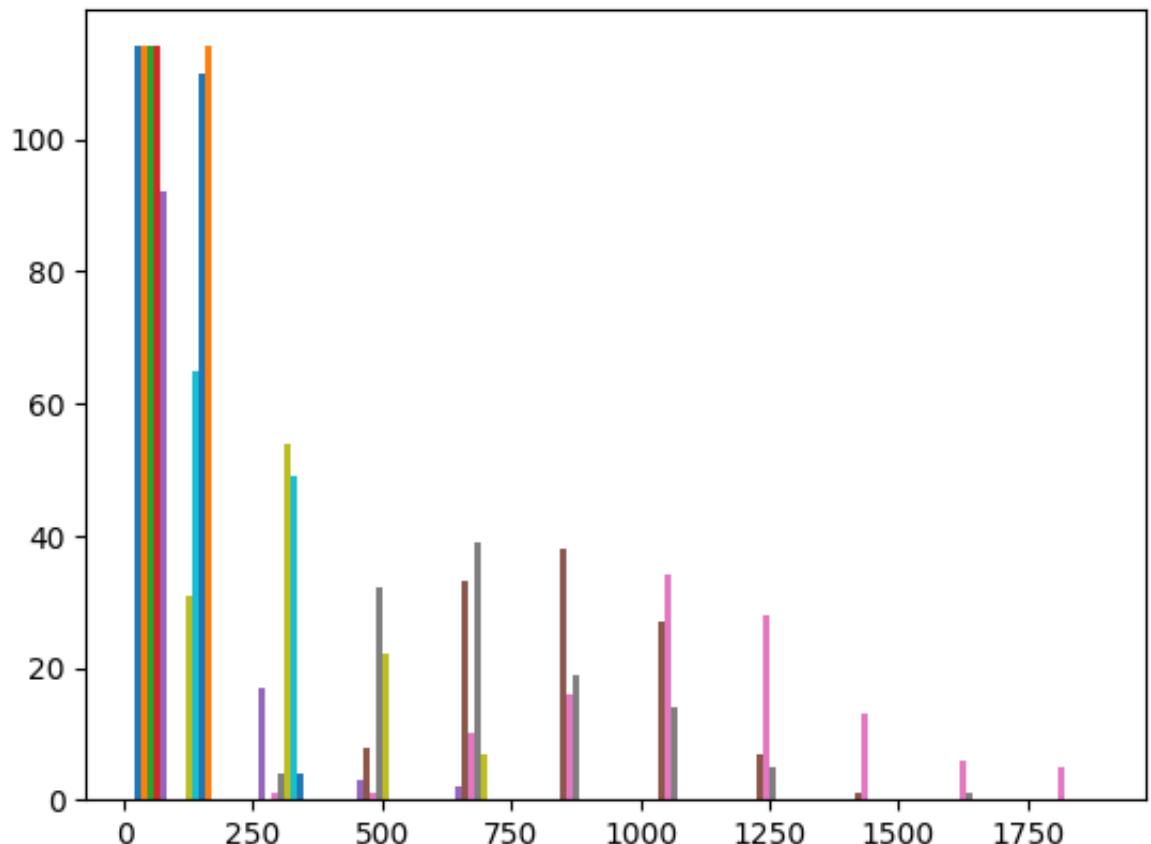
```
Out[48]: <Axes: xlabel='YEAR'>
```



```
In [49]: plt.hist(y)
```

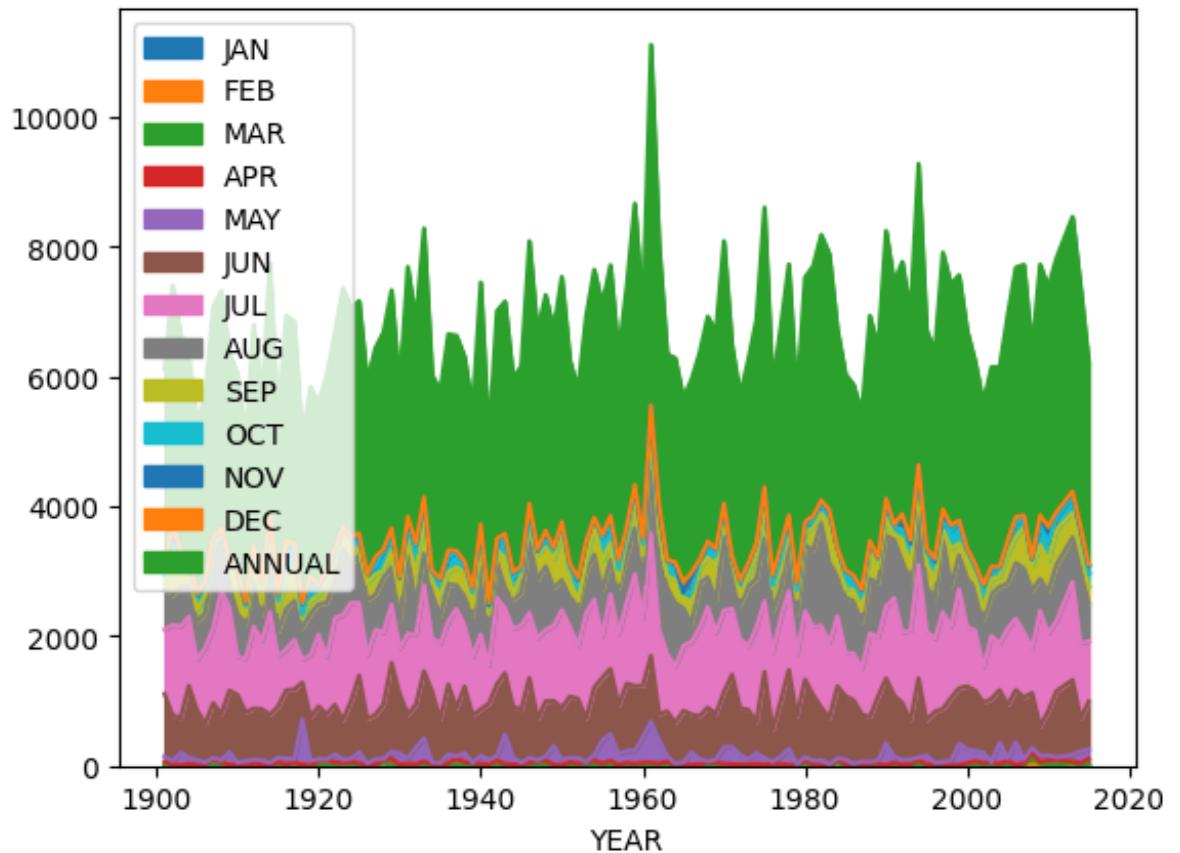
```
Out[49]: (array([[114.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [114.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [114.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [114.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [114.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [ 92.,  17.,  3.,  2.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [  0.,  0.,  8.,  33.,  38.,  27.,  7.,  1.,  0.,  0.,
       0.],
      [  0.,  1.,  1.,  10.,  16.,  34.,  28.,  13.,  6.,
       0.],
      [  0.,  4.,  32.,  39.,  19.,  14.,  5.,  0.,  1.,  0.,
       0.],
      [ 31.,  54.,  22.,  7.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [ 65.,  49.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.]]),
```

```
[110.,   4.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,
0.],  
[114.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,
0.]),  
array([  0. ,  190.49, 380.98, 571.47, 761.96, 952.45, 114
2.94,  
     1333.43, 1523.92, 1714.41, 1904.9 ]),  
<a list of 12 BarContainer objects>)
```



In [50]: `x.plot.area(x="YEAR")`

Out [50]: <Axes: xlabel='YEAR'>



RAYALSEEMA

In [46]: `x=df[df["SUBDIVISION"]=="RAYALSEEMA"]`

X

Out [46]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
3312	3312	RAYALSEEMA	1901	7.0	50.2	0.0	12.1	38.9	53.0	73.4	60.3	109.0
3313	3313	RAYALSEEMA	1902	10.0	0.2	1.7	11.0	36.8	73.6	41.3	148.3	181.7
3314	3314	RAYALSEEMA	1903	30.0	0.1	0.0	3.6	80.5	67.5	127.5	140.6	219.7
3315	3315	RAYALSEEMA	1904	14.8	0.0	1.7	7.1	58.8	39.8	75.1	19.4	84.7
3316	3316	RAYALSEEMA	1905	6.5	6.8	17.0	18.3	44.2	66.1	50.9	219.3	36.5
...
3422	3422	RAYALSEEMA	2011	0.8	12.1	0.0	34.6	33.0	44.5	128.9	163.6	71.2
3423	3423	RAYALSEEMA	2012	2.7	0.0	2.5	32.7	38.8	47.0	139.7	120.0	69.5
3424	3424	RAYALSEEMA	2013	1.3	30.6	11.5	26.8	38.9	73.8	95.7	110.3	163.2
3425	3425	RAYALSEEMA	2014	0.2	0.7	12.5	5.1	46.7	66.3	68.7	115.1	81.4
3426	3426	RAYALSEEMA	2015	1.9	0.0	13.4	73.4	39.7	73.0	43.1	123.6	136.3

115 rows × 20 columns

In [47]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X"])`

Out [47]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	A
3312	1901	7.0	50.2	0.0	12.1	38.9	53.0	73.4	60.3	109.0	81.6	137.2	91.3	
3313	1902	10.0	0.2	1.7	11.0	36.8	73.6	41.3	148.3	181.7	188.5	88.9	36.4	
3314	1903	30.0	0.1	0.0	3.6	80.5	67.5	127.5	140.6	219.7	95.3	289.4	84.0	
3315	1904	14.8	0.0	1.7	7.1	58.8	39.8	75.1	19.4	84.7	111.5	4.4	16.1	
3316	1905	6.5	6.8	17.0	18.3	44.2	66.1	50.9	219.3	36.5	180.2	55.4	2.0	
...	
3422	2011	0.8	12.1	0.0	34.6	33.0	44.5	128.9	163.6	71.2	107.5	106.9	35.1	
3423	2012	2.7	0.0	2.5	32.7	38.8	47.0	139.7	120.0	69.5	113.7	86.6	61.9	
3424	2013	1.3	30.6	11.5	26.8	38.9	73.8	95.7	110.3	163.2	169.3	38.6	2.6	
3425	2014	0.2	0.7	12.5	5.1	46.7	66.3	68.7	115.1	81.4	104.6	37.8	12.8	
3426	2015	1.9	0.0	13.4	73.4	39.7	73.0	43.1	123.6	136.3	106.7	383.8	52.2	

115 rows × 14 columns

In [48]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

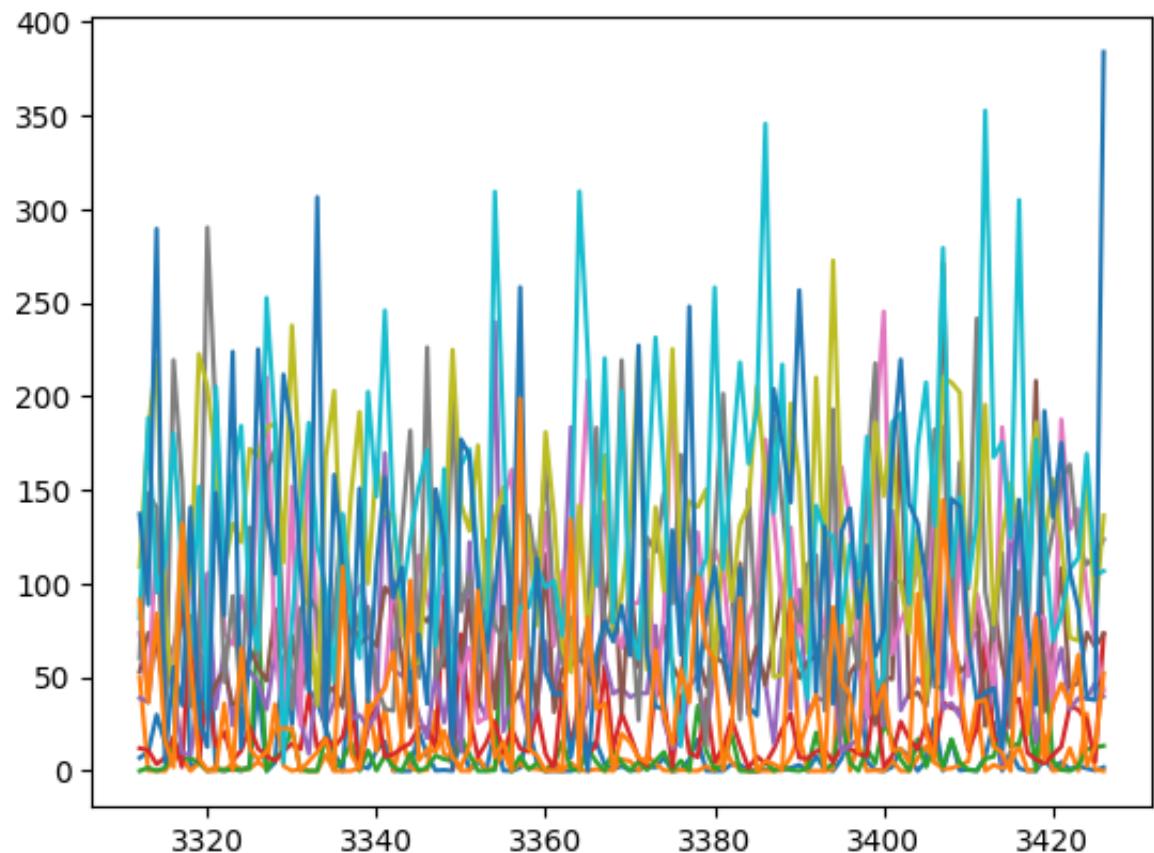
Out [48]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
3312	7.0	50.2	0.0	12.1	38.9	53.0	73.4	60.3	109.0	81.6	137.2	91.3
3313	10.0	0.2	1.7	11.0	36.8	73.6	41.3	148.3	181.7	188.5	88.9	36.4
3314	30.0	0.1	0.0	3.6	80.5	67.5	127.5	140.6	219.7	95.3	289.4	84.0
3315	14.8	0.0	1.7	7.1	58.8	39.8	75.1	19.4	84.7	111.5	4.4	16.1
3316	6.5	6.8	17.0	18.3	44.2	66.1	50.9	219.3	36.5	180.2	55.4	2.0
...
3422	0.8	12.1	0.0	34.6	33.0	44.5	128.9	163.6	71.2	107.5	106.9	35.1
3423	2.7	0.0	2.5	32.7	38.8	47.0	139.7	120.0	69.5	113.7	86.6	61.9
3424	1.3	30.6	11.5	26.8	38.9	73.8	95.7	110.3	163.2	169.3	38.6	2.6
3425	0.2	0.7	12.5	5.1	46.7	66.3	68.7	115.1	81.4	104.6	37.8	12.8
3426	1.9	0.0	13.4	73.4	39.7	73.0	43.1	123.6	136.3	106.7	383.8	52.2

115 rows × 12 columns

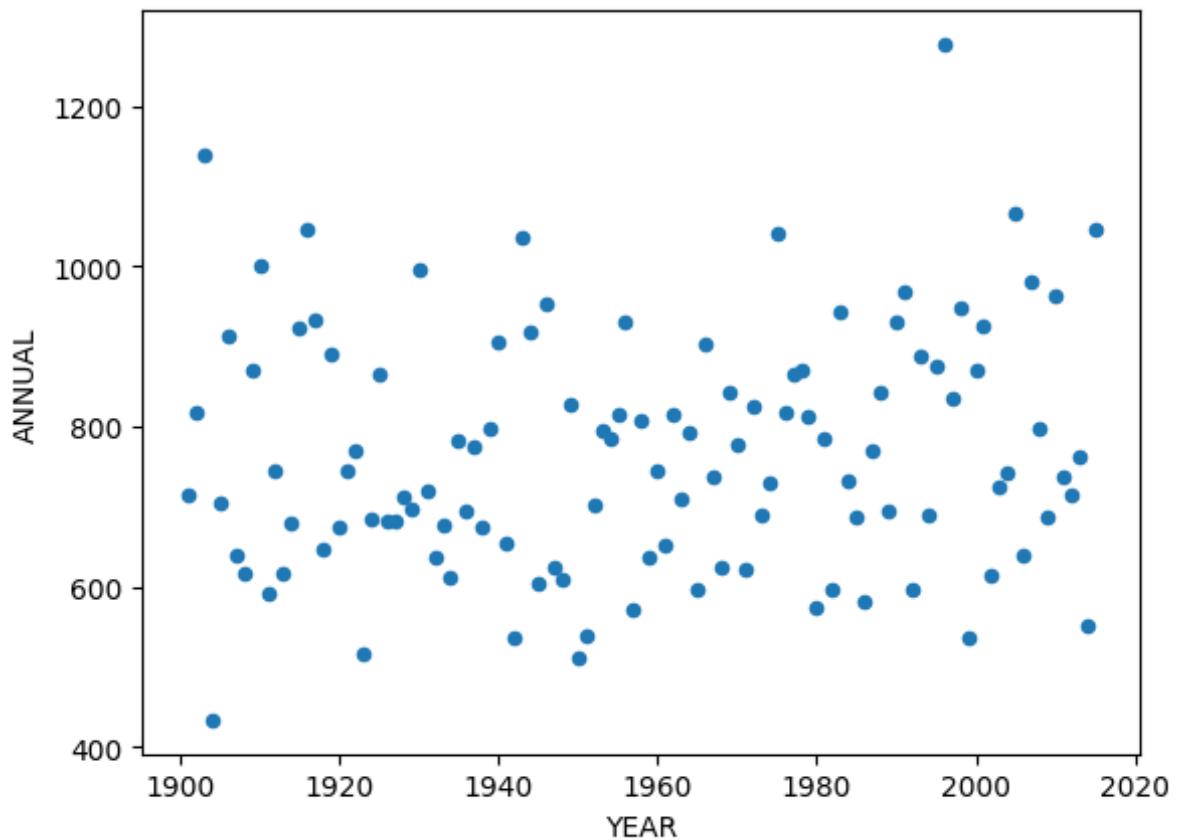
```
In [49]: plt.plot(y)
```

```
Out[49]: [
```



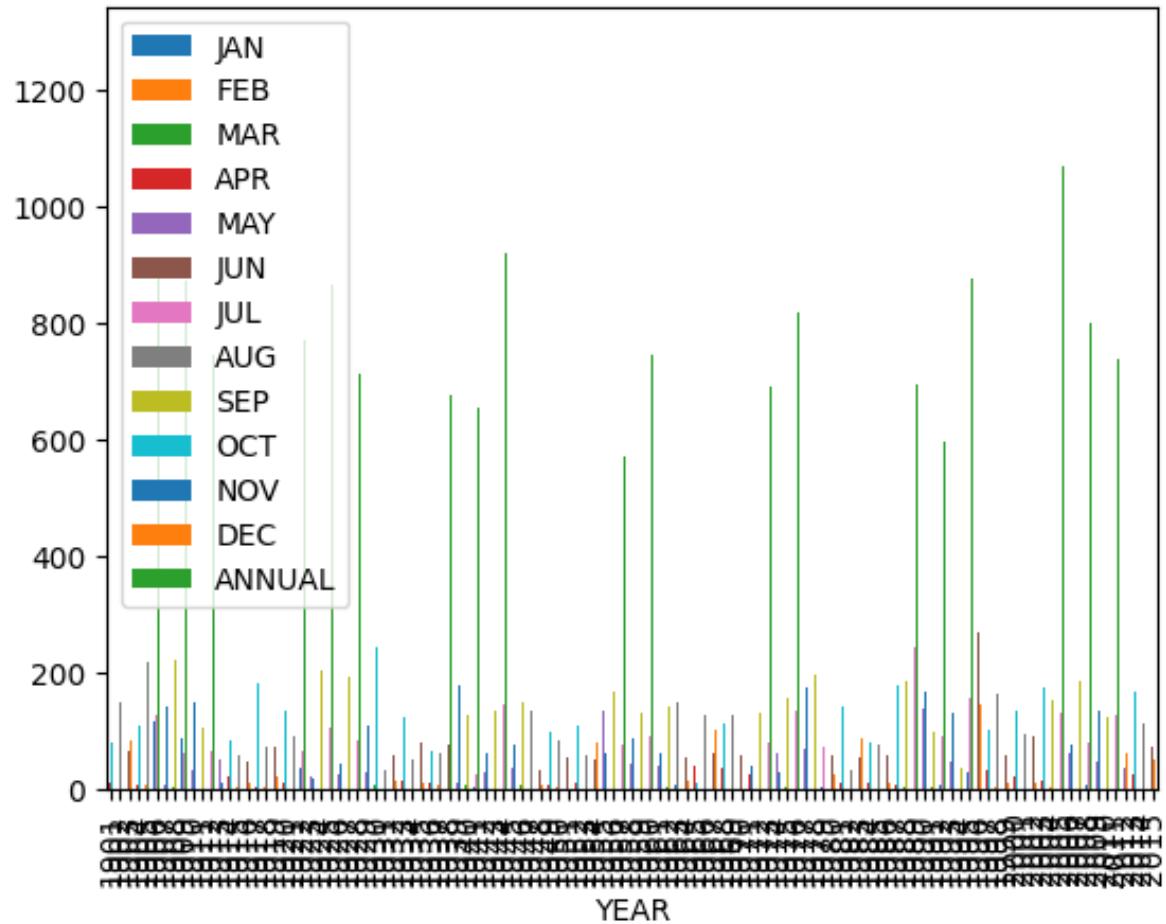
```
In [50]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

```
Out[50]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [51]: x.plot.bar(x="YEAR")
```

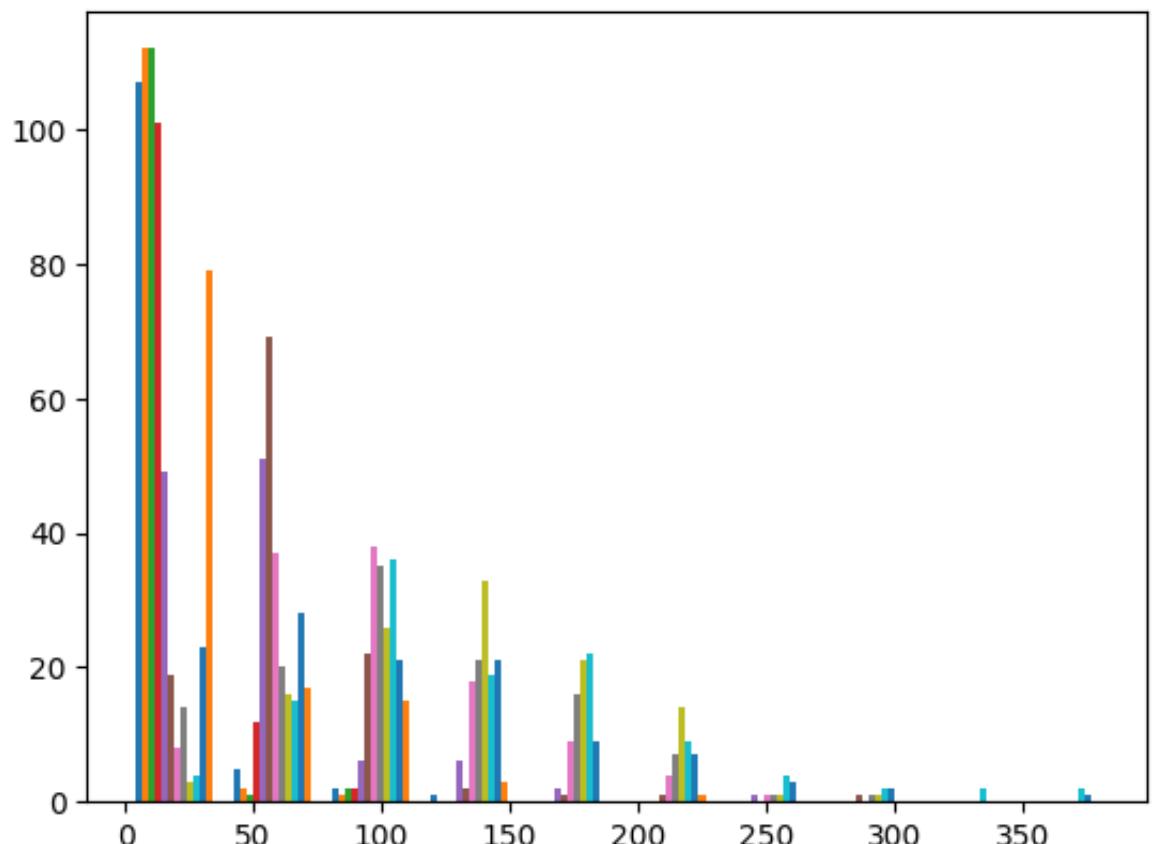
```
Out[51]: <Axes: xlabel='YEAR'>
```



```
In [52]: plt.hist(y)
```

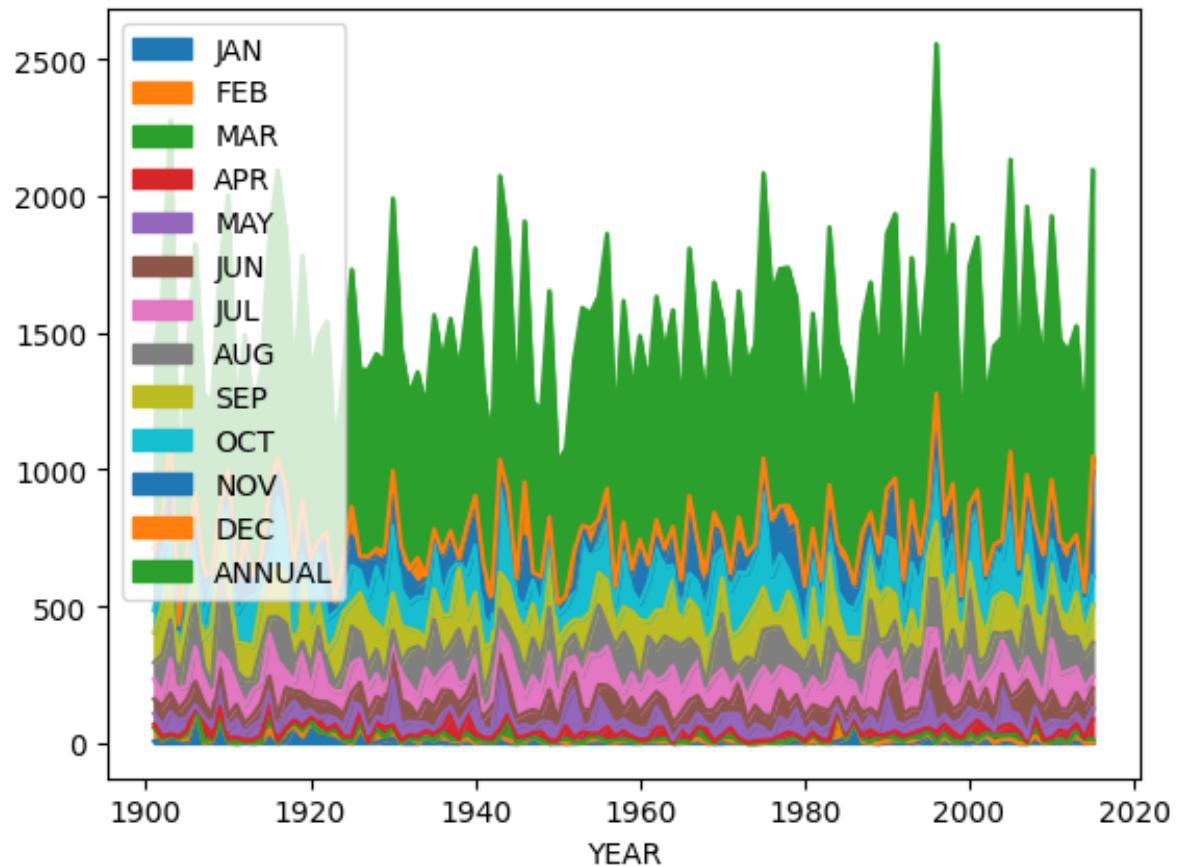
```
Out[52]: (array([[107., 5., 2., 1., 0., 0., 0., 0., 0., 0.,
0.],
[112., 2., 1., 0., 0., 0., 0., 0., 0., 0.,
0.],
[112., 1., 2., 0., 0., 0., 0., 0., 0., 0.,
0.],
[101., 12., 2., 0., 0., 0., 0., 0., 0., 0.,
0.],
[49., 51., 6., 6., 2., 0., 1., 0., 0., 0.,
0.],
[19., 69., 22., 2., 1., 1., 0., 1., 0., 0.,
0.],
[8., 37., 38., 18., 9., 4., 1., 0., 0., 0.,
0.],
[14., 20., 35., 21., 16., 7., 1., 1., 1., 0.,
0.],
[3., 16., 26., 33., 21., 14., 1., 1., 1., 0.,
0.],
[4., 15., 36., 19., 22., 9., 4., 2., 2., 2.,
2.],
```

```
[ 23.,  28.,  21.,  21.,  9.,  7.,  3.,  2.,  0.,
1.],
[ 79.,  17.,  15.,  3.,  0.,  1.,  0.,  0.,  0.,
0.]),
array([ 0. ,  38.38,  76.76, 115.14, 153.52, 191.9 , 230.28, 26
8.66,
       307.04, 345.42, 383.8 ]),
<a list of 12 BarContainer objects>)
```



In [53]: `x.plot.area(x="YEAR")`

Out [53]: <Axes: xlabel='YEAR'>



TELANGANA

In [59]: `x=df[df["SUBDIVISION"]=="TELANGANA"]
x`

Out [59]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
3197	3197	TELANGANA	1901	6.9	41.8	7.8	45.2	22.0	123.6	237.8	177.2	77.7
3198	3198	TELANGANA	1902	0.0	0.0	0.2	10.7	7.3	52.4	146.3	142.8	190.5
3199	3199	TELANGANA	1903	12.9	4.6	0.0	9.9	40.7	99.2	505.2	246.7	191.9
3200	3200	TELANGANA	1904	0.0	0.0	10.8	0.8	14.7	104.2	139.5	50.0	162.3
3201	3201	TELANGANA	1905	0.0	4.3	12.8	27.6	32.2	129.5	82.4	237.3	179.1
...
3307	3307	TELANGANA	2011	0.0	11.9	2.6	25.6	9.3	83.9	268.2	225.9	107.6
3308	3308	TELANGANA	2012	6.7	0.0	0.2	14.0	8.4	124.4	300.3	229.9	202.4
3309	3309	TELANGANA	2013	2.4	29.0	0.2	24.4	8.5	213.4	453.8	230.6	161.4
3310	3310	TELANGANA	2014	0.2	2.9	58.3	10.3	73.3	62.3	146.0	205.2	146.8
3311	3311	TELANGANA	2015	17.5	0.0	43.0	65.7	23.3	266.9	104.4	160.5	158.3

115 rows × 20 columns

In [60]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out [60]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	A
3197	1901	6.9	41.8	7.8	45.2	22.0	123.6	237.8	177.2	77.7	75.5	12.2	0.0	
3198	1902	0.0	0.0	0.2	10.7	7.3	52.4	146.3	142.8	190.5	41.7	31.2	7.3	
3199	1903	12.9	4.6	0.0	9.9	40.7	99.2	505.2	246.7	191.9	155.8	15.5	1.1	
3200	1904	0.0	0.0	10.8	0.8	14.7	104.2	139.5	50.0	162.3	44.4	0.0	0.0	
3201	1905	0.0	4.3	12.8	27.6	32.2	129.5	82.4	237.3	179.1	19.6	0.0	0.0	
...	
3307	2011	0.0	11.9	2.6	25.6	9.3	83.9	268.2	225.9	107.6	13.9	4.2	0.0	
3308	2012	6.7	0.0	0.2	14.0	8.4	124.4	300.3	229.9	202.4	83.6	38.7	0.0	
3309	2013	2.4	29.0	0.2	24.4	8.5	213.4	453.8	230.6	161.4	205.9	16.4	2.7	
3310	2014	0.2	2.9	58.3	10.3	73.3	62.3	146.0	205.2	146.8	29.6	10.8	0.7	
3311	2015	17.5	0.0	43.0	65.7	23.3	266.9	104.4	160.5	158.3	15.6	0.3	1.7	

115 rows × 14 columns

In [61]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
`y`

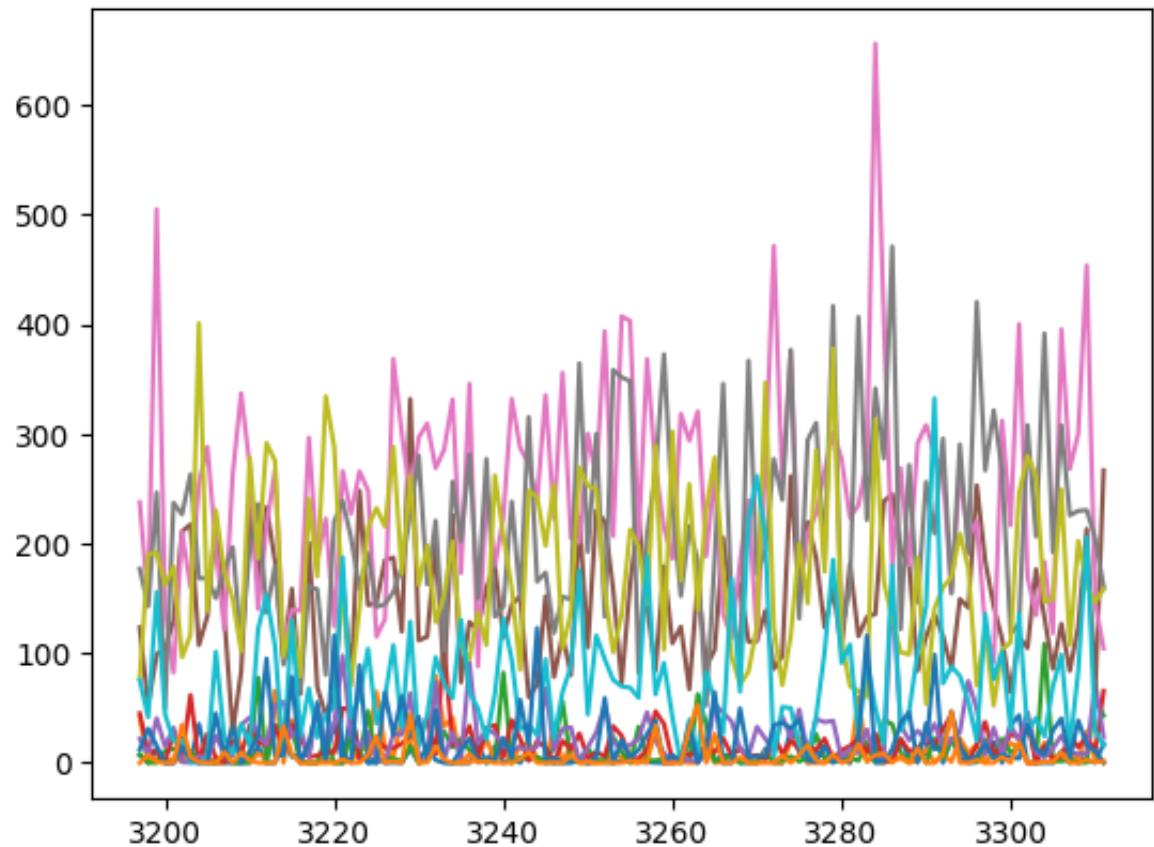
Out [61]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
3197	6.9	41.8	7.8	45.2	22.0	123.6	237.8	177.2	77.7	75.5	12.2	0.0
3198	0.0	0.0	0.2	10.7	7.3	52.4	146.3	142.8	190.5	41.7	31.2	7.3
3199	12.9	4.6	0.0	9.9	40.7	99.2	505.2	246.7	191.9	155.8	15.5	1.1
3200	0.0	0.0	10.8	0.8	14.7	104.2	139.5	50.0	162.3	44.4	0.0	0.0
3201	0.0	4.3	12.8	27.6	32.2	129.5	82.4	237.3	179.1	19.6	0.0	0.0
...
3307	0.0	11.9	2.6	25.6	9.3	83.9	268.2	225.9	107.6	13.9	4.2	0.0
3308	6.7	0.0	0.2	14.0	8.4	124.4	300.3	229.9	202.4	83.6	38.7	0.0
3309	2.4	29.0	0.2	24.4	8.5	213.4	453.8	230.6	161.4	205.9	16.4	2.7
3310	0.2	2.9	58.3	10.3	73.3	62.3	146.0	205.2	146.8	29.6	10.8	0.7
3311	17.5	0.0	43.0	65.7	23.3	266.9	104.4	160.5	158.3	15.6	0.3	1.7

115 rows × 12 columns

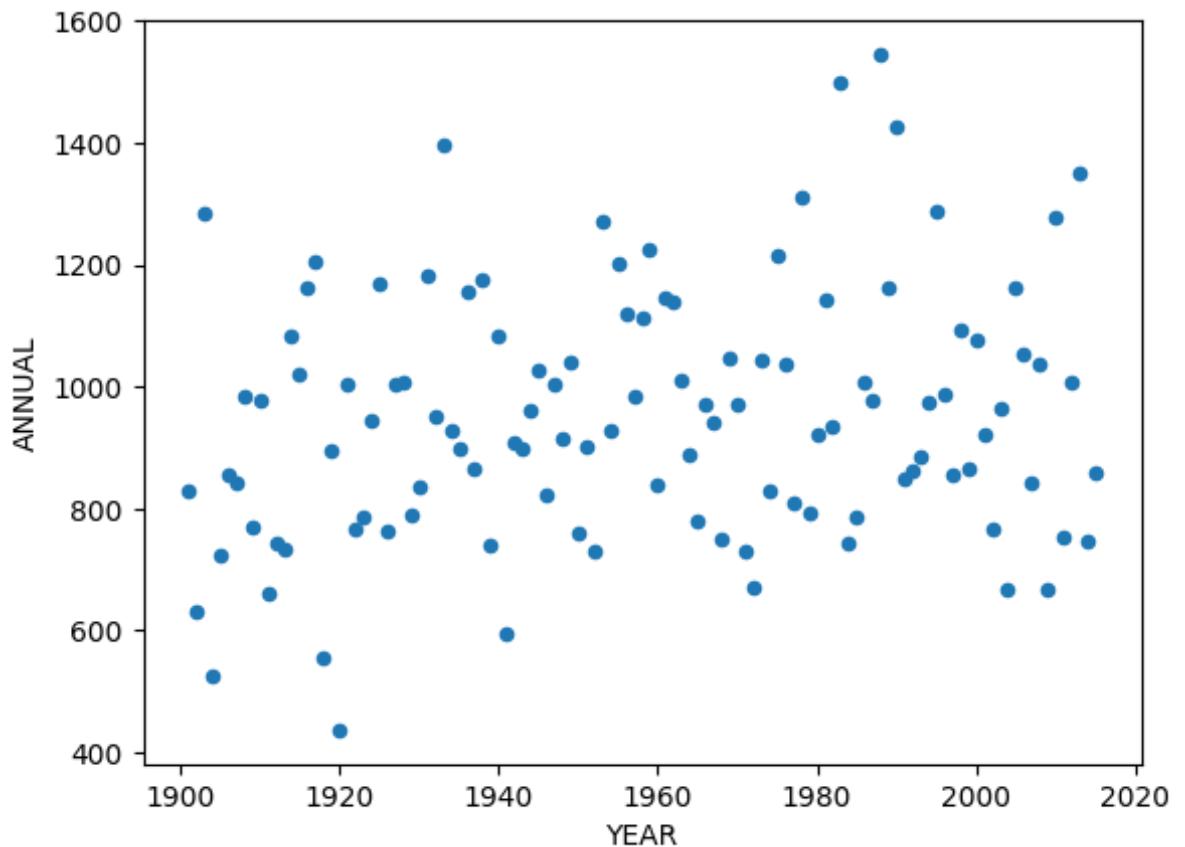
```
In [62]: plt.plot(y)
```

```
Out[62]: [
```



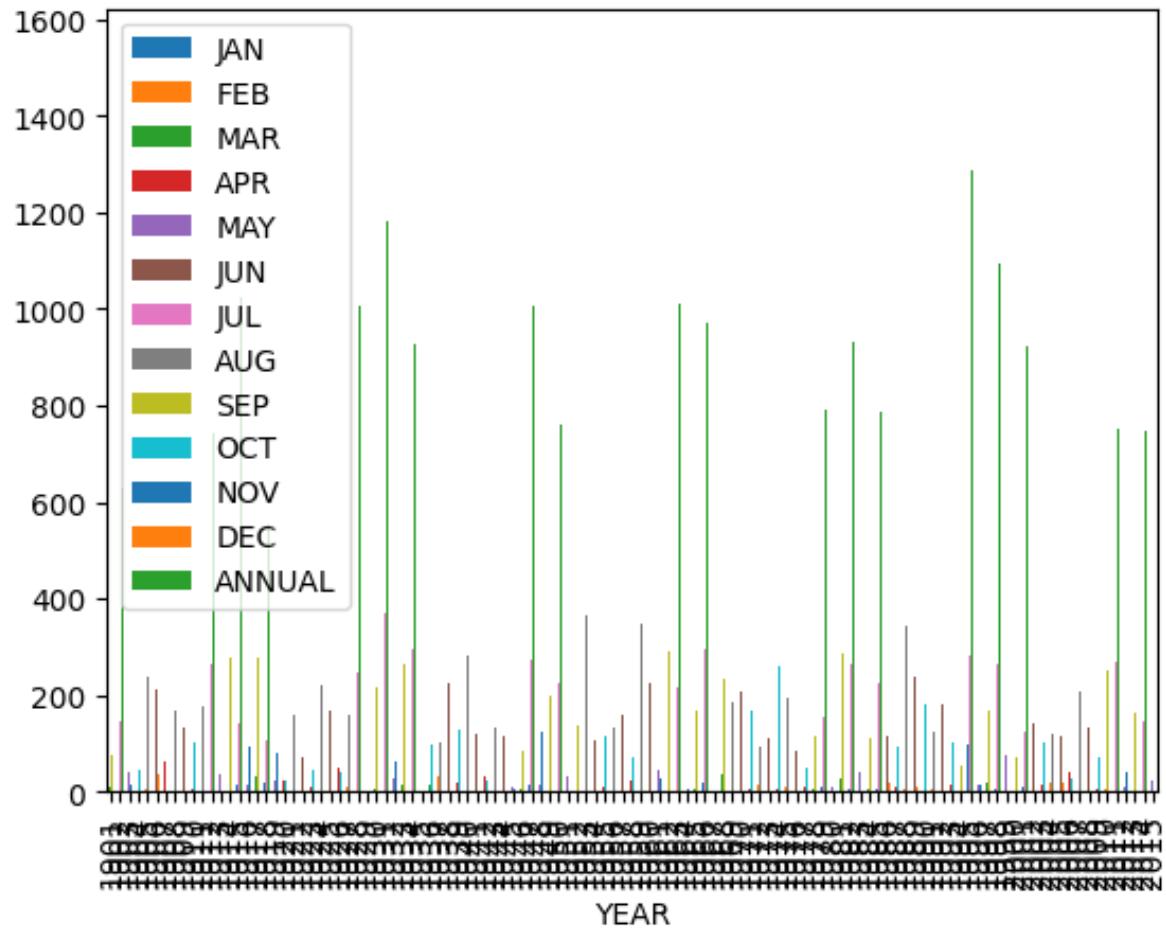
```
In [63]: x.plot.scatter(x="YEAR", y="ANNUAL")
```

```
Out[63]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



In [64]: `x.plot.bar(x="YEAR")`

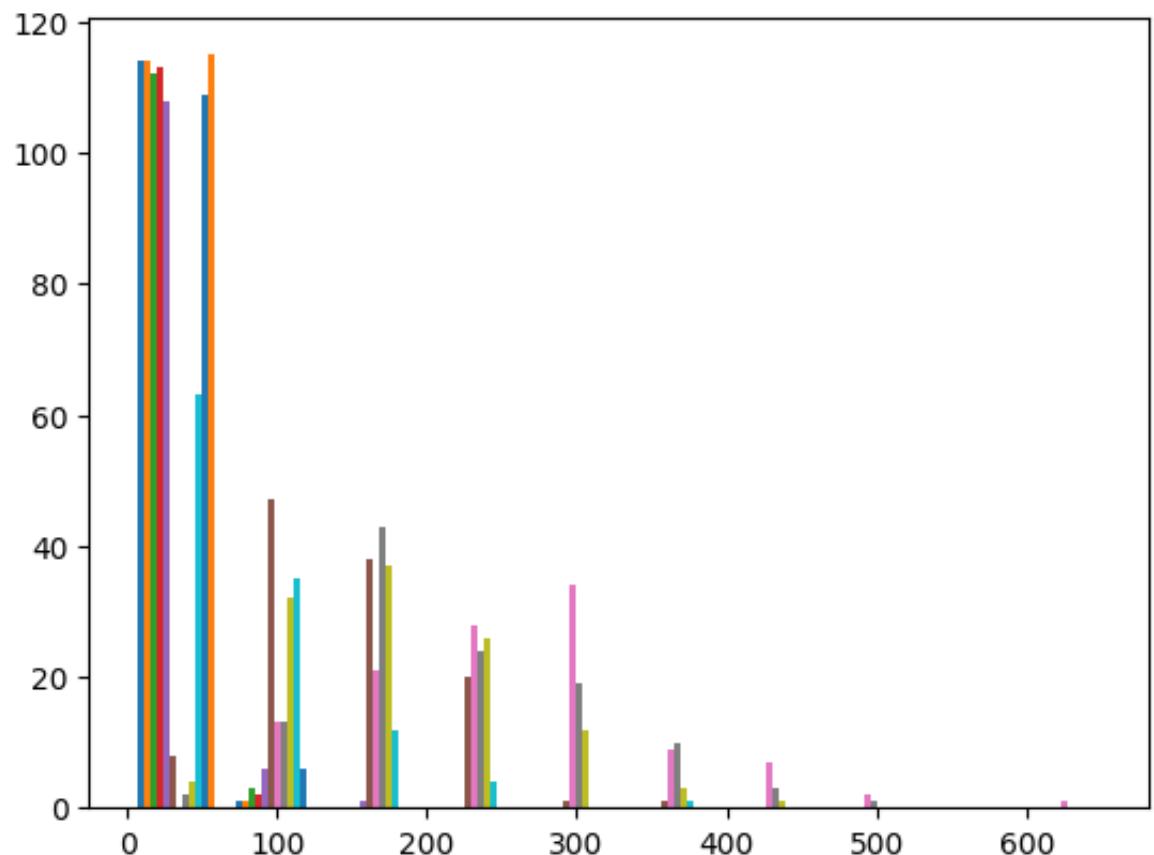
Out [64]: <Axes: xlabel='YEAR'>



In [65]: `plt.hist(y)`

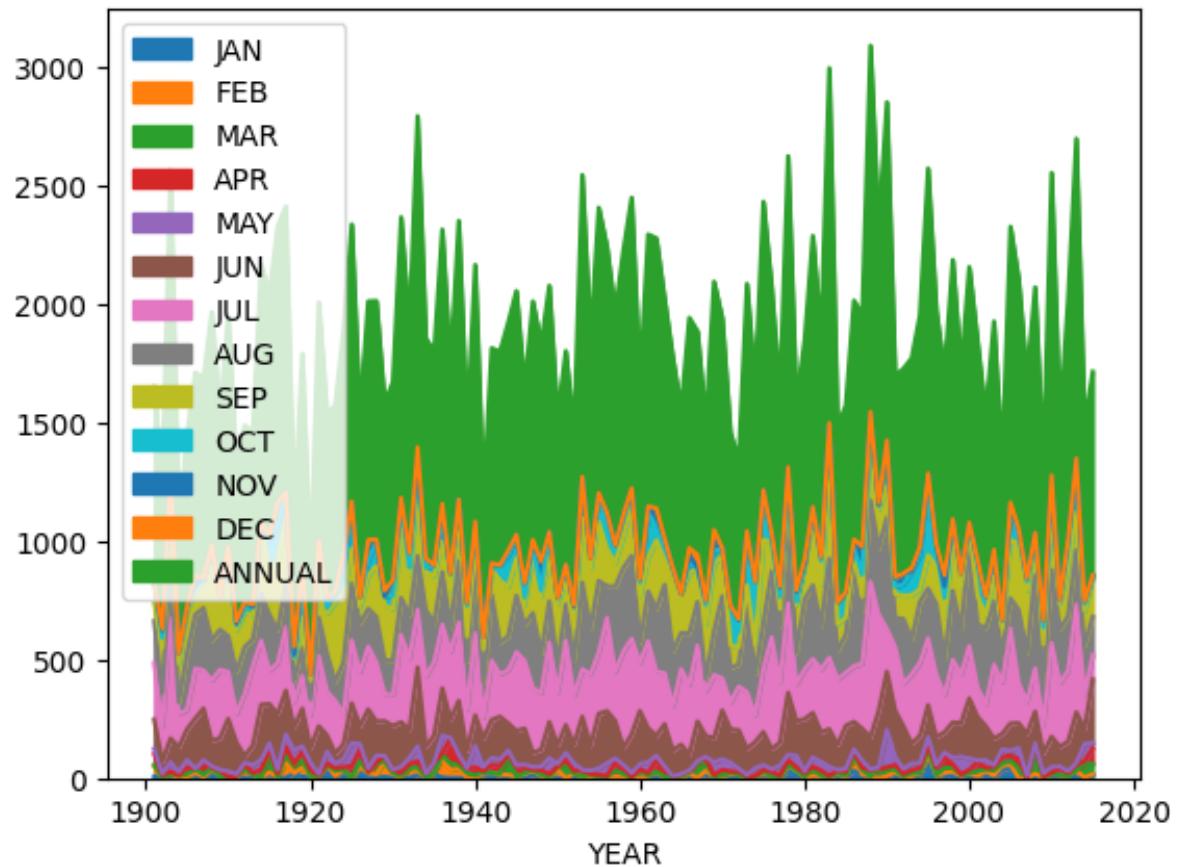
Out [65]: `(array([[114., 1., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[114., 1., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[112., 3., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[113., 2., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[108., 6., 1., 0., 0., 0., 0., 0., 0., 0.,
0.],
[8., 47., 38., 20., 1., 1., 0., 0., 0., 0.,
0.],
[0., 13., 21., 28., 34., 9., 7., 2., 0., 0.,
1.],
[2., 13., 43., 24., 19., 10., 3., 1., 0., 0.,
0.],
[4., 32., 37., 26., 12., 3., 1., 0., 0., 0.,
0.],
[63., 35., 12., 4., 0., 1., 0., 0., 0., 0.,
0.],
[0.],`

```
[109.,   6.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,
0.],
[115.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,
0.]),
array([  0. ,  65.62, 131.24, 196.86, 262.48, 328.1 , 393.72, 45
9.34,
      524.96, 590.58, 656.2 ]),
<a list of 12 BarContainer objects>)
```



In [66]: `x.plot.area(x="YEAR")`

Out [66]: <Axes: xlabel='YEAR'>



COASTAL ANDHRA PRADESH

In [67]: `x=df[df["SUBDIVISION"]=="COASTAL ANDHRA PRADESH"]
x`

Out [67]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEF
3082	3082	COASTAL ANDHRA PRADESH	1901	18.8	80.9	7.2	28.7	68.7	77.7	113.0	133.7	125.3
3083	3083	COASTAL ANDHRA PRADESH	1902	2.0	0.0	2.8	23.9	37.6	72.6	144.5	236.1	204.5
3084	3084	COASTAL ANDHRA PRADESH	1903	0.8	13.3	0.2	6.2	73.4	154.0	248.6	258.0	216.5
3085	3085	COASTAL ANDHRA PRADESH	1904	1.3	0.0	5.4	3.0	136.3	107.8	120.2	117.7	116.8
3086	3086	COASTAL ANDHRA PRADESH	1905	1.1	16.7	68.0	37.0	68.8	84.4	64.6	210.8	170.2
...
3192	3192	COASTAL ANDHRA PRADESH	2011	0.0	17.9	0.9	62.3	67.9	86.8	196.0	215.8	129.7
3193	3193	COASTAL ANDHRA PRADESH	2012	37.6	0.0	2.7	24.0	39.3	95.4	221.9	221.2	246.5
3194	3194	COASTAL ANDHRA PRADESH	2013	2.0	29.6	0.2	48.0	28.2	127.5	162.4	123.1	132.0
3195	3195	COASTAL ANDHRA PRADESH	2014	0.4	1.2	9.1	6.0	112.9	45.7	151.8	177.8	144.5
3196	3196	COASTAL ANDHRA PRADESH	2015	2.0	0.6	5.5	32.3	34.1	283.8	116.0	192.0	201.8

115 rows × 20 columns

In [68]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out [68]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
3082	1901	18.8	80.9	7.2	28.7	68.7	77.7	113.0	133.7	125.3	173.4	164.8	1.5
3083	1902	2.0	0.0	2.8	23.9	37.6	72.6	144.5	236.1	204.5	262.0	50.4	27.1
3084	1903	0.8	13.3	0.2	6.2	73.4	154.0	248.6	258.0	216.5	159.1	173.9	12.1
3085	1904	1.3	0.0	5.4	3.0	136.3	107.8	120.2	117.7	116.8	240.9	0.0	10.7
3086	1905	1.1	16.7	68.0	37.0	68.8	84.4	64.6	210.8	170.2	66.0	7.4	0.0
...
3192	2011	0.0	17.9	0.9	62.3	67.9	86.8	196.0	215.8	129.7	74.6	4.9	5.0
3193	2012	37.6	0.0	2.7	24.0	39.3	95.4	221.9	221.2	246.5	140.0	289.7	0.0
3194	2013	2.0	29.6	0.2	48.0	28.2	127.5	162.4	123.1	132.0	411.5	53.1	2.8
3195	2014	0.4	1.2	9.1	6.0	112.9	45.7	151.8	177.8	144.5	195.6	23.7	6.4
3196	2015	2.0	0.6	5.5	32.3	34.1	283.8	116.0	192.0	201.8	59.7	81.2	2.0

115 rows × 14 columns

In [69]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

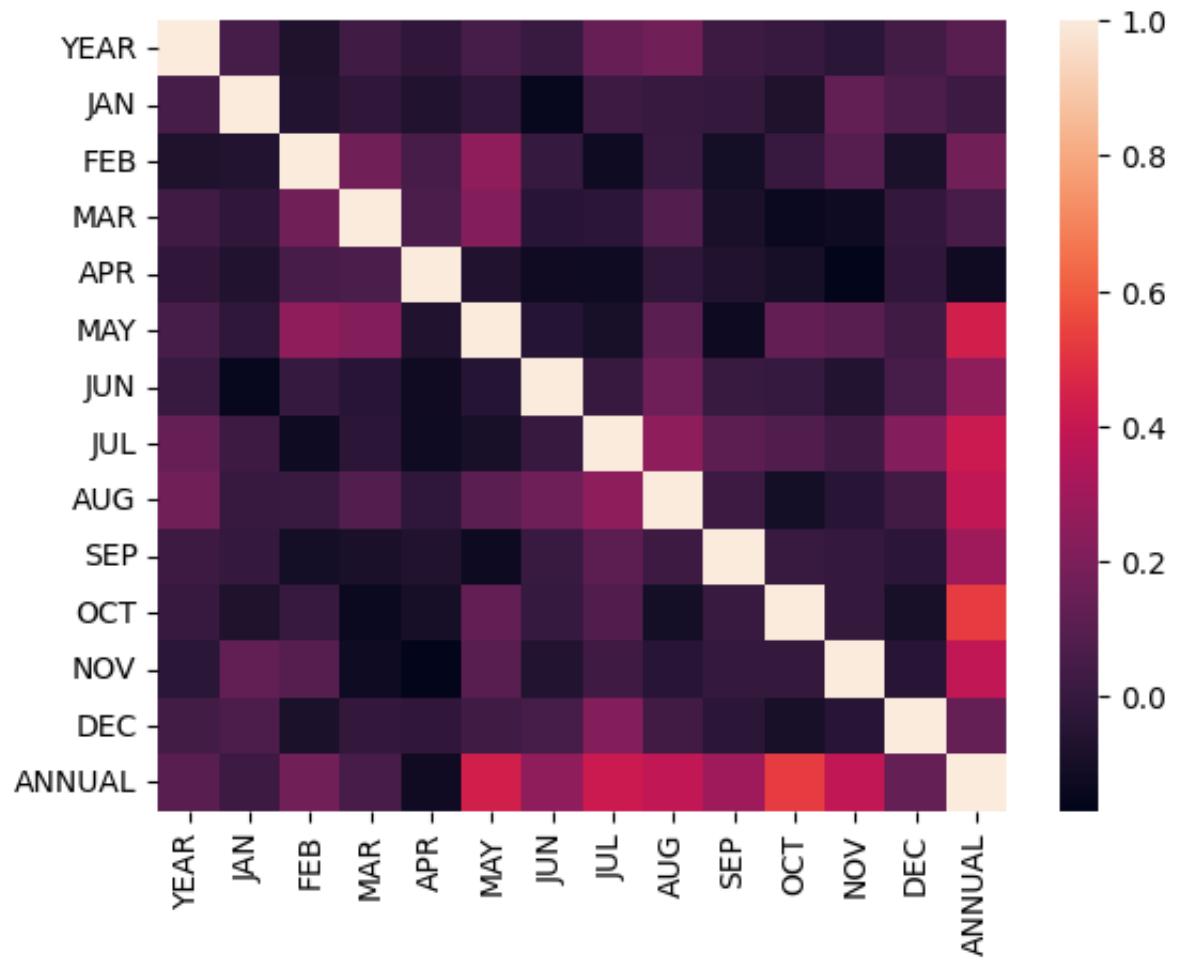
Out [69]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
3082	18.8	80.9	7.2	28.7	68.7	77.7	113.0	133.7	125.3	173.4	164.8	1.5
3083	2.0	0.0	2.8	23.9	37.6	72.6	144.5	236.1	204.5	262.0	50.4	27.1
3084	0.8	13.3	0.2	6.2	73.4	154.0	248.6	258.0	216.5	159.1	173.9	12.1
3085	1.3	0.0	5.4	3.0	136.3	107.8	120.2	117.7	116.8	240.9	0.0	10.7
3086	1.1	16.7	68.0	37.0	68.8	84.4	64.6	210.8	170.2	66.0	7.4	0.0
...
3192	0.0	17.9	0.9	62.3	67.9	86.8	196.0	215.8	129.7	74.6	4.9	5.0
3193	37.6	0.0	2.7	24.0	39.3	95.4	221.9	221.2	246.5	140.0	289.7	0.0
3194	2.0	29.6	0.2	48.0	28.2	127.5	162.4	123.1	132.0	411.5	53.1	2.8
3195	0.4	1.2	9.1	6.0	112.9	45.7	151.8	177.8	144.5	195.6	23.7	6.4
3196	2.0	0.6	5.5	32.3	34.1	283.8	116.0	192.0	201.8	59.7	81.2	2.0

115 rows × 12 columns

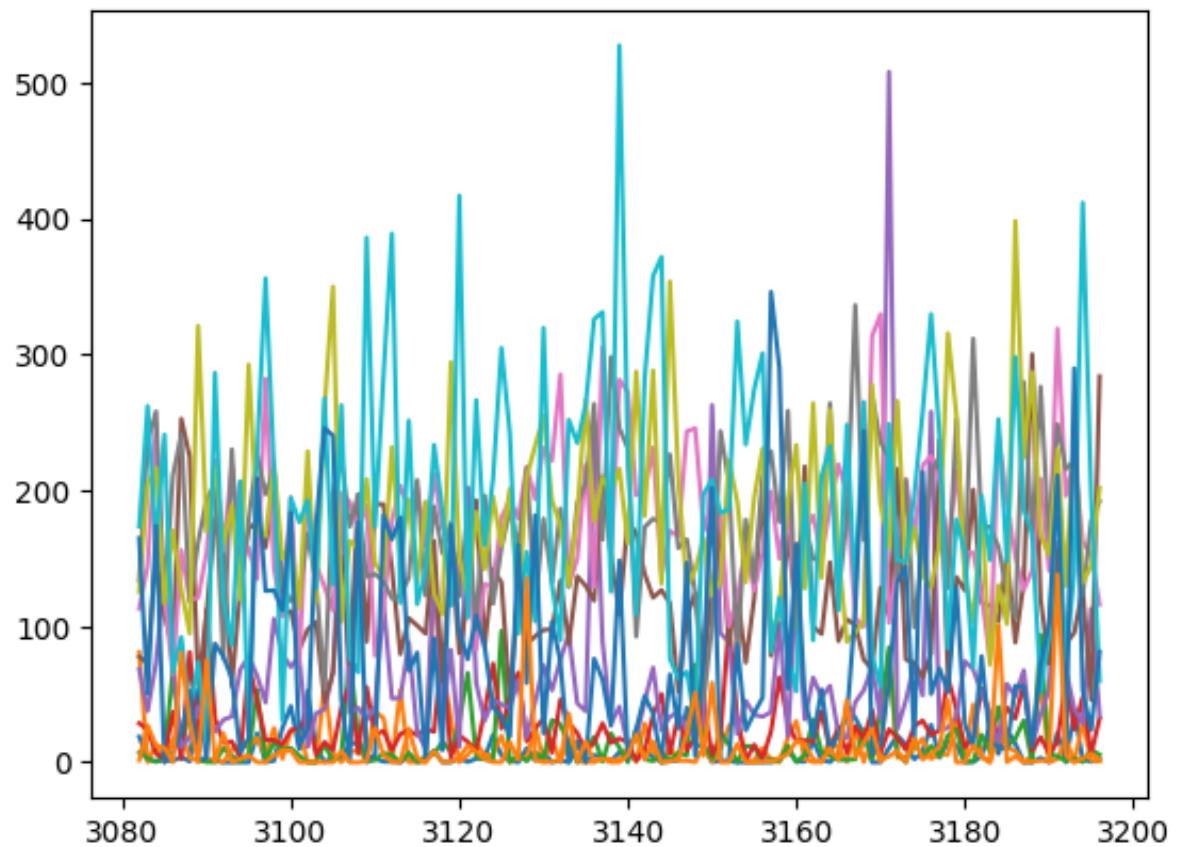
In [70]: `sns.heatmap(x.corr())`

Out[70]: <Axes: >



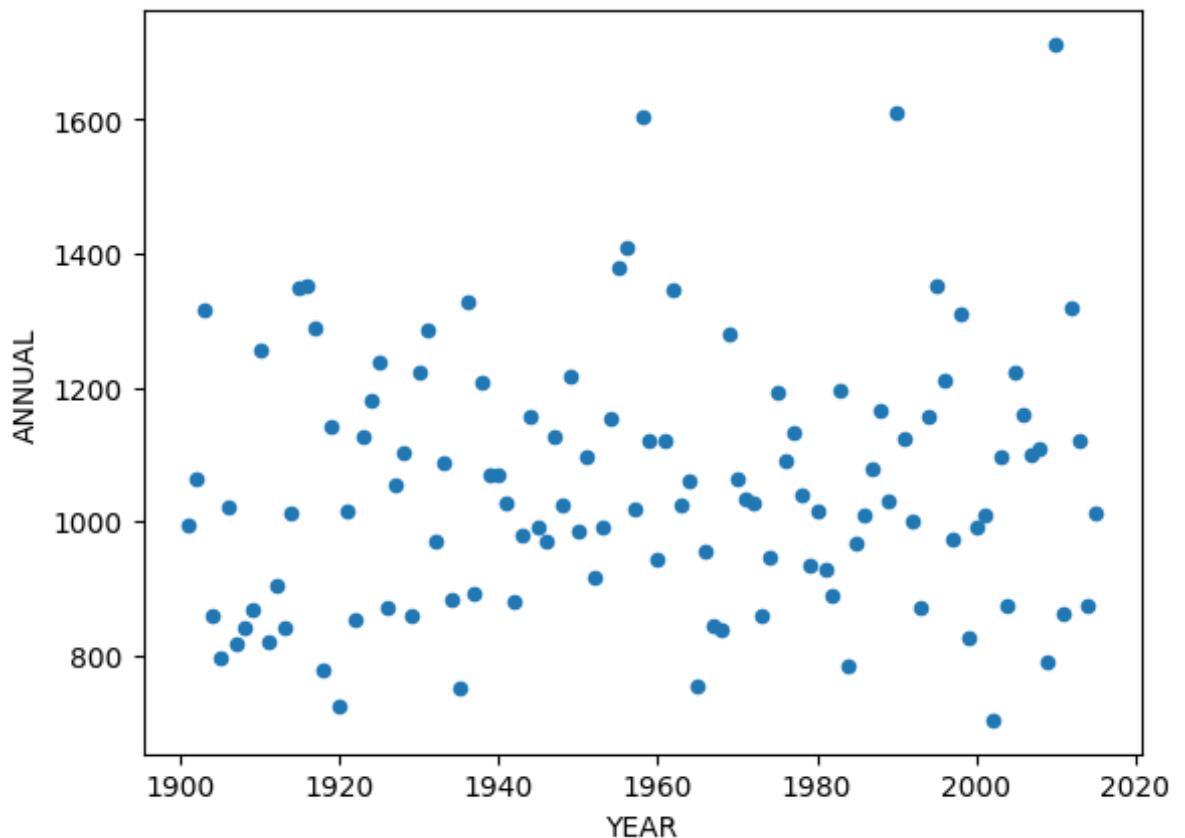
```
In [71]: plt.plot(y)
```

```
Out[71]: [
```



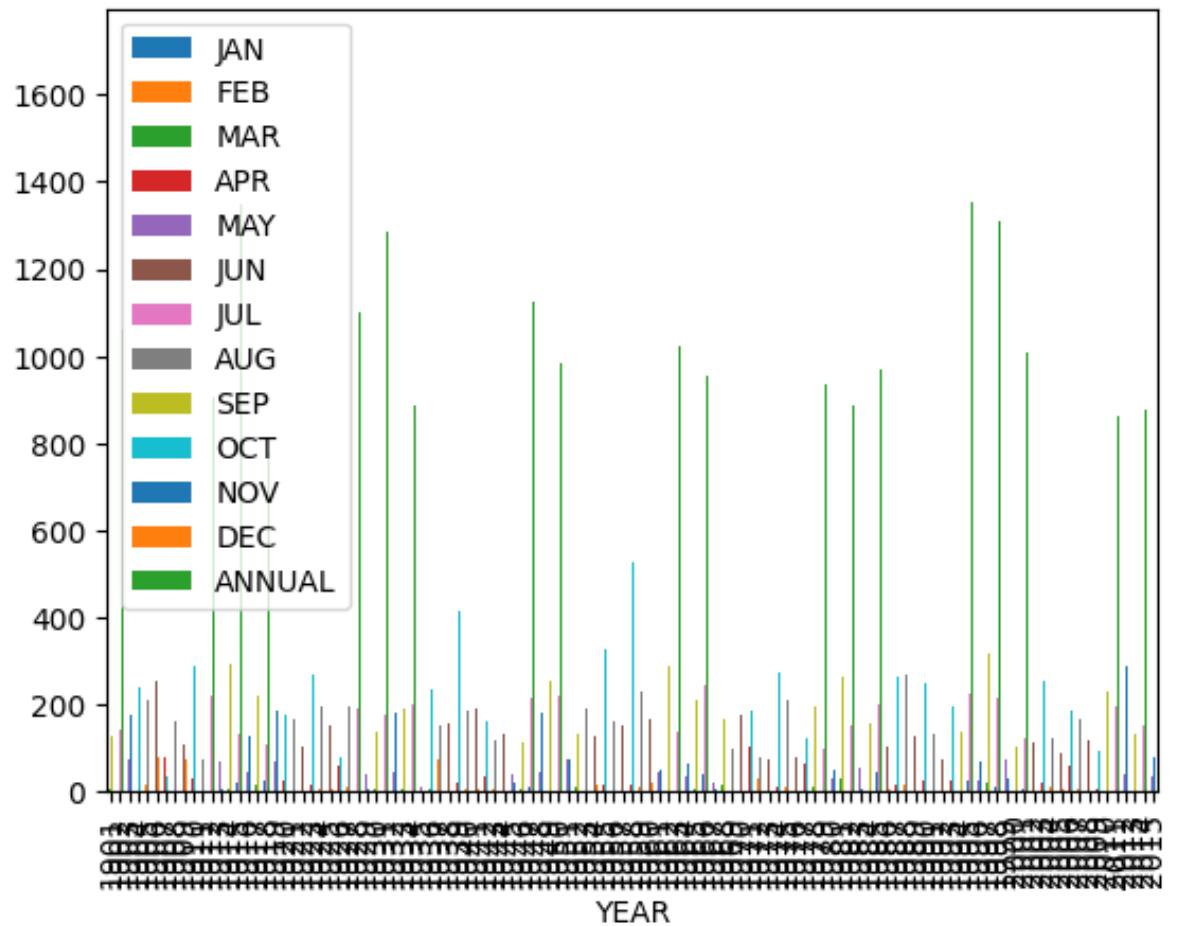
In [72]: `x.plot.scatter(x="YEAR", y="ANNUAL")`

Out[72]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>



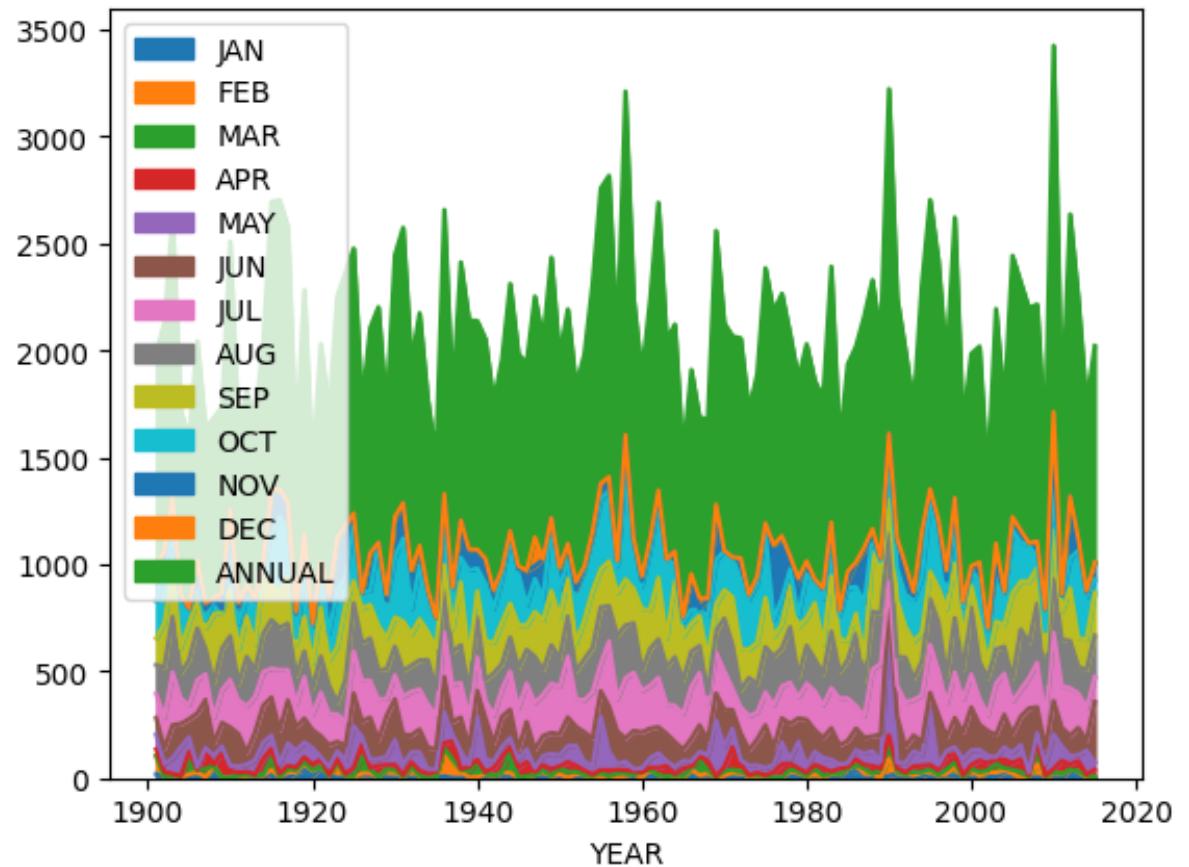
In [73]: `x.plot.bar(x="YEAR")`

Out[73]: <Axes: xlabel='YEAR'>



In [74]: `x.plot.area(x="YEAR")`

Out [74]: <Axes: xlabel='YEAR'>



CHHATTISGARH

In [75]: `x=df[df["SUBDIVISION"]=="CHHATTISGARH"]
x`

Out [75]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	S
2967	2967	CHHATTISGARH	1901	48.9	116.5	27.8	5.5	18.4	101.6	381.0	476.7	18
2968	2968	CHHATTISGARH	1902	0.6	6.5	0.4	13.9	10.3	37.2	403.8	236.6	19
2969	2969	CHHATTISGARH	1903	6.2	13.9	0.4	6.8	51.1	110.7	365.9	396.0	21
2970	2970	CHHATTISGARH	1904	0.0	8.6	32.3	0.2	77.5	369.5	303.6	483.6	8
2971	2971	CHHATTISGARH	1905	50.3	22.6	19.0	24.6	31.8	40.4	443.7	270.8	33
...
3077	3077	CHHATTISGARH	2011	0.3	11.5	2.6	35.0	16.8	183.5	272.6	379.8	38
3078	3078	CHHATTISGARH	2012	36.6	4.8	1.1	14.9	9.4	147.3	430.6	442.2	24
3079	3079	CHHATTISGARH	2013	2.8	19.7	4.9	45.8	5.7	263.6	418.8	336.6	14
3080	3080	CHHATTISGARH	2014	2.3	29.0	21.4	17.3	25.0	104.9	416.7	327.7	25
3081	3081	CHHATTISGARH	2015	15.8	1.2	21.2	37.0	13.0	257.6	248.6	286.6	21

115 rows × 20 columns

In [76]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–Dec"])
x`

Out [76]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2967	1901	48.9	116.5	27.8	5.5	18.4	101.6	381.0	476.7	182.8	27.3	0.4	0.0
2968	1902	0.6	6.5	0.4	13.9	10.3	37.2	403.8	236.6	198.1	4.7	8.1	3.7
2969	1903	6.2	13.9	0.4	6.8	51.1	110.7	365.9	396.0	212.0	168.0	0.1	0.0
2970	1904	0.0	8.6	32.3	0.2	77.5	369.5	303.6	483.6	86.8	129.3	1.0	0.0
2971	1905	50.3	22.6	19.0	24.6	31.8	40.4	443.7	270.8	338.8	8.9	0.0	0.0
...
3077	2011	0.3	11.5	2.6	35.0	16.8	183.5	272.6	379.8	382.2	15.5	0.0	2.8
3078	2012	36.6	4.8	1.1	14.9	9.4	147.3	430.6	442.2	245.3	19.8	20.4	5.0
3079	2013	2.8	19.7	4.9	45.8	5.7	263.6	418.8	336.6	140.9	180.9	0.3	0.0
3080	2014	2.3	29.0	21.4	17.3	25.0	104.9	416.7	327.7	252.7	77.9	2.6	1.1
3081	2015	15.8	1.2	21.2	37.0	13.0	257.6	248.6	286.6	216.9	17.7	0.6	1.5

115 rows × 14 columns

In [77]:

```
y=x.drop(["YEAR","ANNUAL"],axis=1)
y
```

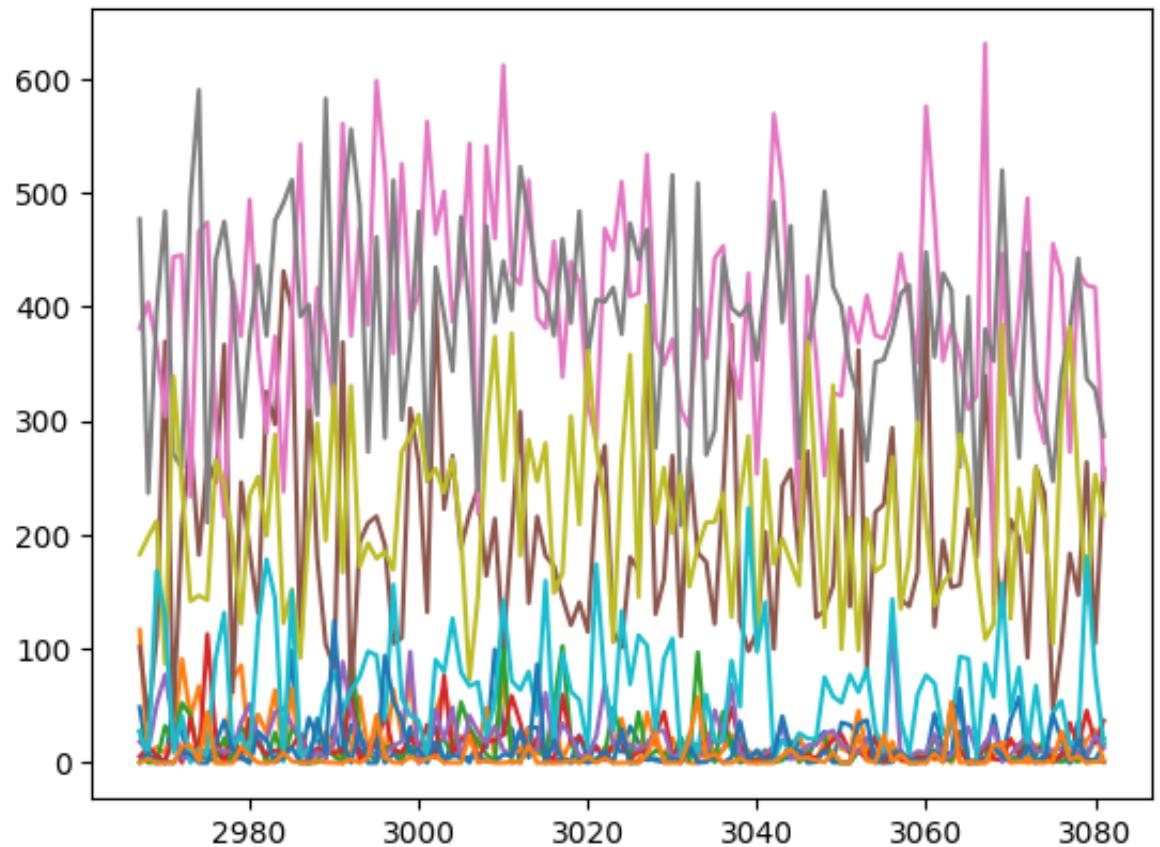
Out [77]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2967	48.9	116.5	27.8	5.5	18.4	101.6	381.0	476.7	182.8	27.3	0.4	0.0
2968	0.6	6.5	0.4	13.9	10.3	37.2	403.8	236.6	198.1	4.7	8.1	3.7
2969	6.2	13.9	0.4	6.8	51.1	110.7	365.9	396.0	212.0	168.0	0.1	0.0
2970	0.0	8.6	32.3	0.2	77.5	369.5	303.6	483.6	86.8	129.3	1.0	0.0
2971	50.3	22.6	19.0	24.6	31.8	40.4	443.7	270.8	338.8	8.9	0.0	0.0
...
3077	0.3	11.5	2.6	35.0	16.8	183.5	272.6	379.8	382.2	15.5	0.0	2.8
3078	36.6	4.8	1.1	14.9	9.4	147.3	430.6	442.2	245.3	19.8	20.4	5.0
3079	2.8	19.7	4.9	45.8	5.7	263.6	418.8	336.6	140.9	180.9	0.3	0.0
3080	2.3	29.0	21.4	17.3	25.0	104.9	416.7	327.7	252.7	77.9	2.6	1.1
3081	15.8	1.2	21.2	37.0	13.0	257.6	248.6	286.6	216.9	17.7	0.6	1.5

115 rows × 12 columns

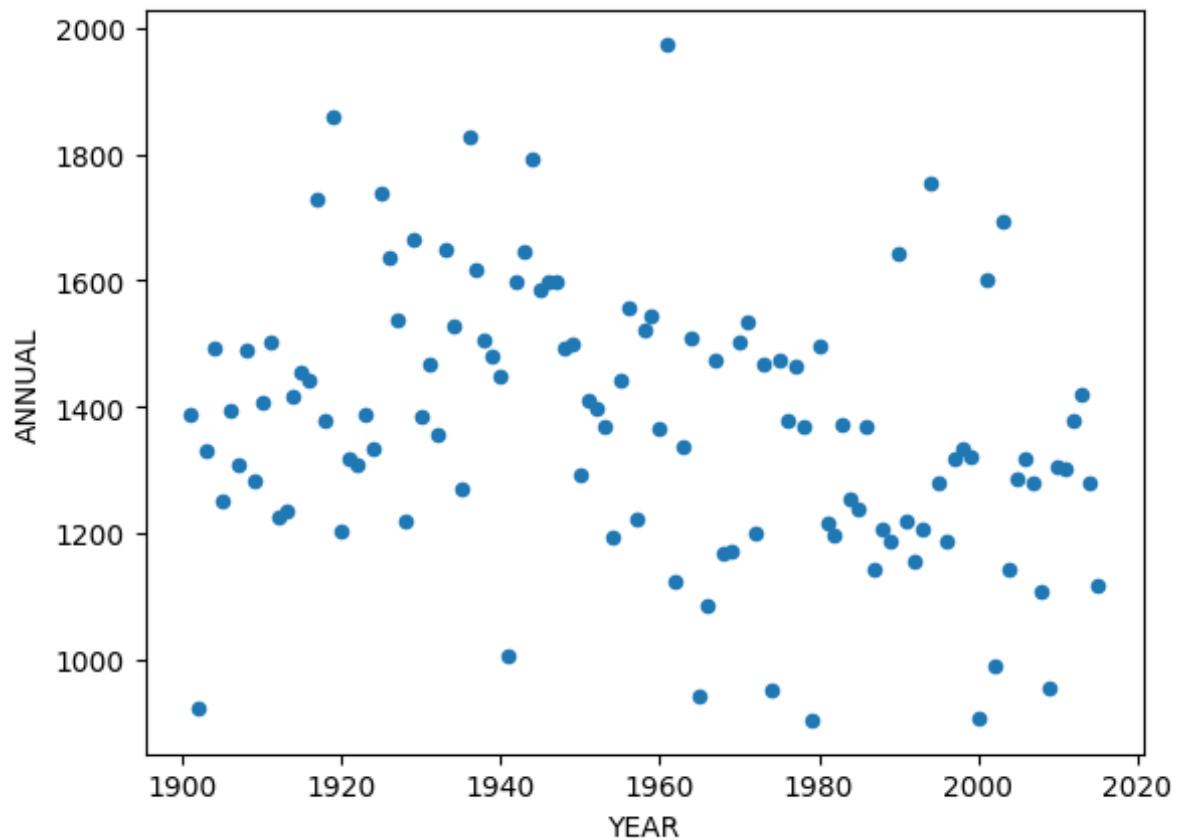
```
In [78]: plt.plot(y)
```

```
Out[78]: [
```



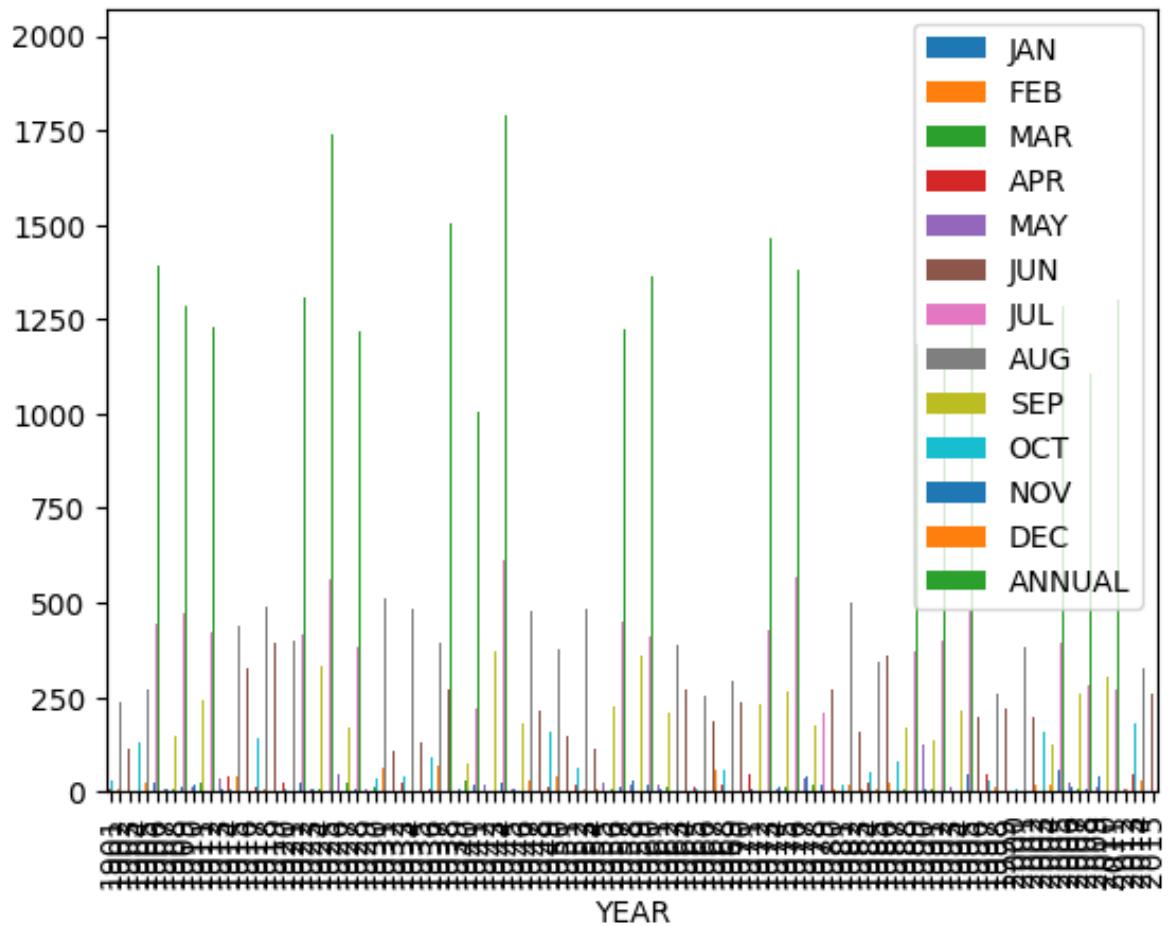
```
In [79]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

```
Out[79]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



In [80]: `x.plot.bar(x="YEAR")`

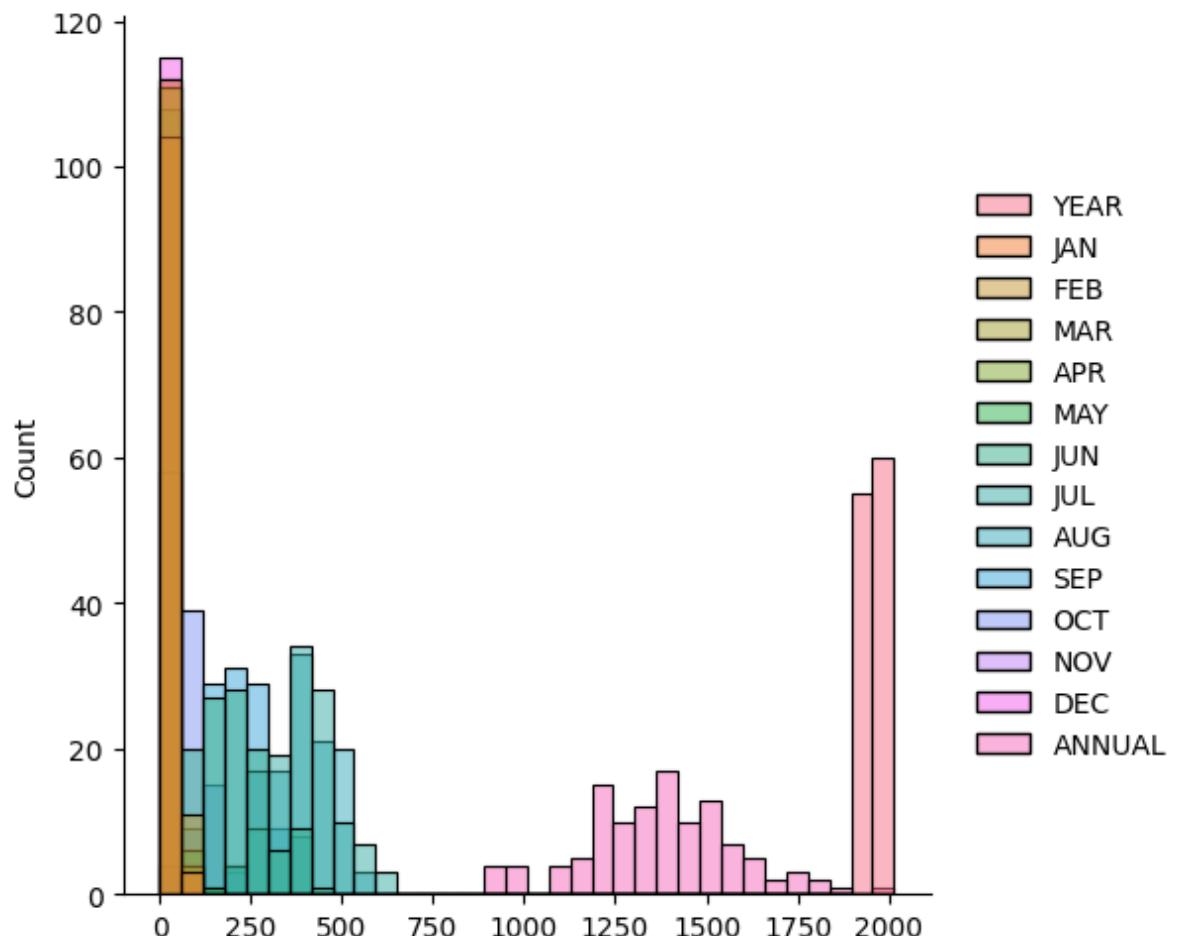
Out [80]: <Axes: xlabel='YEAR'>



In [81]: `sns.displot(x)`

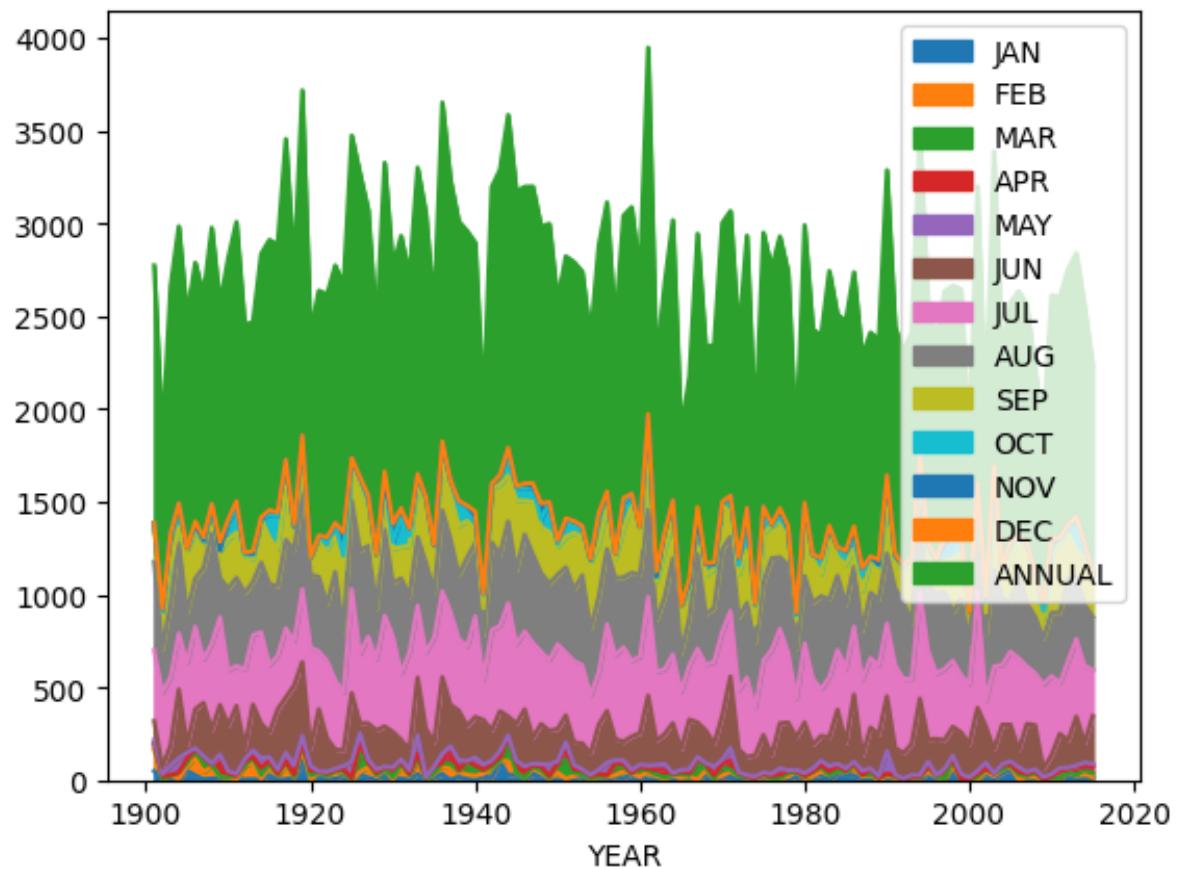
```
C:\Users\Gokul Jana\AppData\Local\Programs\Python\Python311\Lib\site-packages\seaborn\axisgrid.py:118: UserWarning: The figure layout has changed to tight
  self._figure.tight_layout(*args, **kwargs)
```

Out [81]: <seaborn.axisgrid.FacetGrid at 0x26ded4d6550>



In [82]: `x.plot.area(x="YEAR")`

Out [82]: <Axes: xlabel='YEAR'>



VIDARBHA

In [83]: `x=df[df["SUBDIVISION"]=="VIDARBHA"]`

X

Out [83]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
2852	2852	VIDARBHA	1901	36.8	39.9	30.9	26.1	7.3	129.7	295.3	368.8	123.4
2853	2853	VIDARBHA	1902	1.6	0.1	0.0	6.5	4.1	38.0	270.7	204.7	150.9
2854	2854	VIDARBHA	1903	5.2	4.0	0.1	2.5	37.8	121.2	475.5	325.5	154.8
2855	2855	VIDARBHA	1904	4.3	2.4	12.9	0.2	14.8	148.9	158.3	151.8	196.9
2856	2856	VIDARBHA	1905	7.3	12.7	12.4	16.2	14.0	81.0	254.5	216.3	321.3
...
2962	2962	VIDARBHA	2011	0.0	1.2	0.1	7.7	0.6	137.9	247.1	302.8	191.0
2963	2963	VIDARBHA	2012	3.1	0.1	0.0	0.6	0.2	125.5	370.5	316.2	249.4
2964	2964	VIDARBHA	2013	6.6	13.0	3.8	2.8	0.5	366.7	535.5	326.1	131.7
2965	2965	VIDARBHA	2014	1.2	18.3	49.6	2.6	4.0	63.3	337.6	191.7	224.9
2966	2966	VIDARBHA	2015	26.3	4.7	66.3	28.1	12.8	254.6	137.2	288.9	167.5

115 rows × 20 columns

In [84]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–Dec"],axis=1)`

Out [84]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	A
2852	1901	36.8	39.9	30.9	26.1	7.3	129.7	295.3	368.8	123.4	35.2	0.0	0.0	
2853	1902	1.6	0.1	0.0	6.5	4.1	38.0	270.7	204.7	150.9	29.6	16.1	26.7	
2854	1903	5.2	4.0	0.1	2.5	37.8	121.2	475.5	325.5	154.8	100.8	2.0	0.0	
2855	1904	4.3	2.4	12.9	0.2	14.8	148.9	158.3	151.8	196.9	61.7	0.0	0.9	
2856	1905	7.3	12.7	12.4	16.2	14.0	81.0	254.5	216.3	321.3	6.0	0.2	0.0	
...	
2962	2011	0.0	1.2	0.1	7.7	0.6	137.9	247.1	302.8	191.0	4.7	0.0	0.0	
2963	2012	3.1	0.1	0.0	0.6	0.2	125.5	370.5	316.2	249.4	34.9	7.3	0.0	
2964	2013	6.6	13.0	3.8	2.8	0.5	366.7	535.5	326.1	131.7	133.5	0.0	0.0	
2965	2014	1.2	18.3	49.6	2.6	4.0	63.3	337.6	191.7	224.9	17.3	6.2	2.3	
2966	2015	26.3	4.7	66.3	28.1	12.8	254.6	137.2	288.9	167.5	7.0	0.0	0.2	

115 rows × 14 columns

In [85]:

```
y=x.drop(["YEAR","ANNUAL"],axis=1)  
y
```

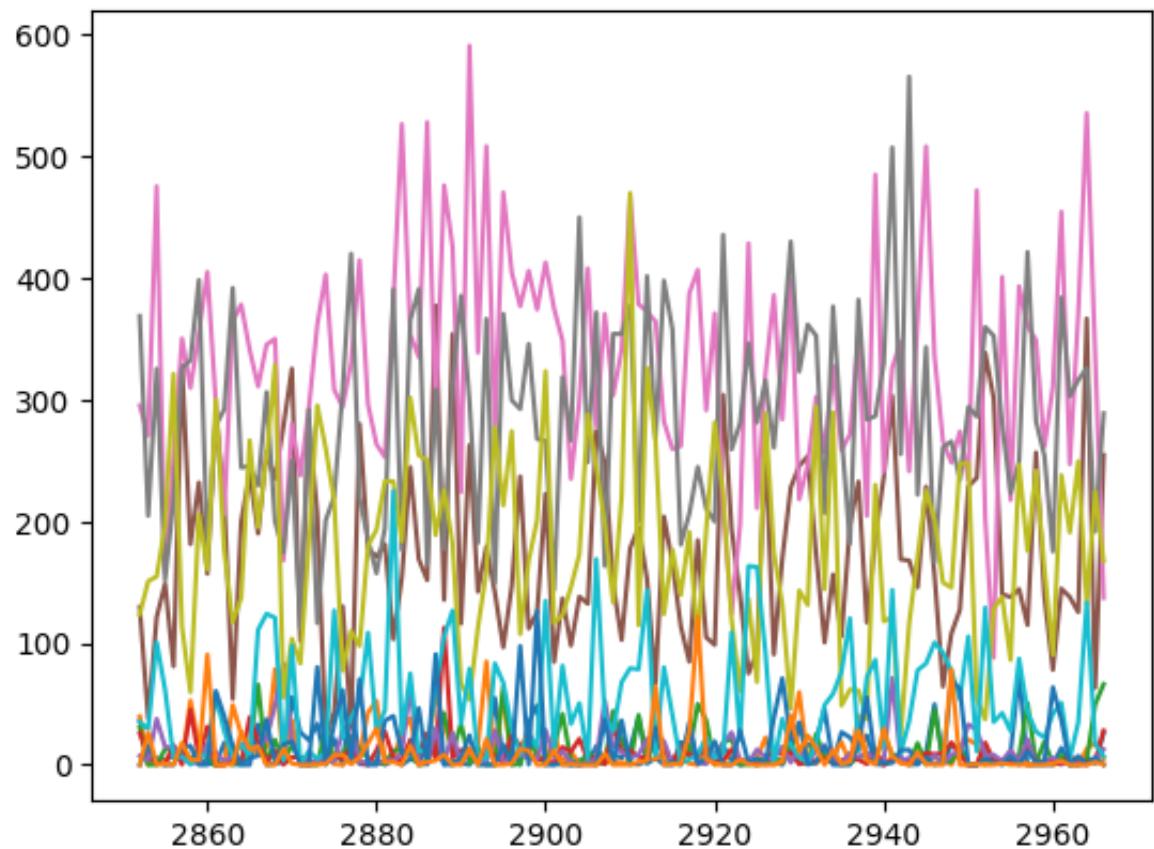
Out [85]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2852	36.8	39.9	30.9	26.1	7.3	129.7	295.3	368.8	123.4	35.2	0.0	0.0
2853	1.6	0.1	0.0	6.5	4.1	38.0	270.7	204.7	150.9	29.6	16.1	26.7
2854	5.2	4.0	0.1	2.5	37.8	121.2	475.5	325.5	154.8	100.8	2.0	0.0
2855	4.3	2.4	12.9	0.2	14.8	148.9	158.3	151.8	196.9	61.7	0.0	0.9
2856	7.3	12.7	12.4	16.2	14.0	81.0	254.5	216.3	321.3	6.0	0.2	0.0
...
2962	0.0	1.2	0.1	7.7	0.6	137.9	247.1	302.8	191.0	4.7	0.0	0.0
2963	3.1	0.1	0.0	0.6	0.2	125.5	370.5	316.2	249.4	34.9	7.3	0.0
2964	6.6	13.0	3.8	2.8	0.5	366.7	535.5	326.1	131.7	133.5	0.0	0.0
2965	1.2	18.3	49.6	2.6	4.0	63.3	337.6	191.7	224.9	17.3	6.2	2.3
2966	26.3	4.7	66.3	28.1	12.8	254.6	137.2	288.9	167.5	7.0	0.0	0.2

115 rows × 12 columns

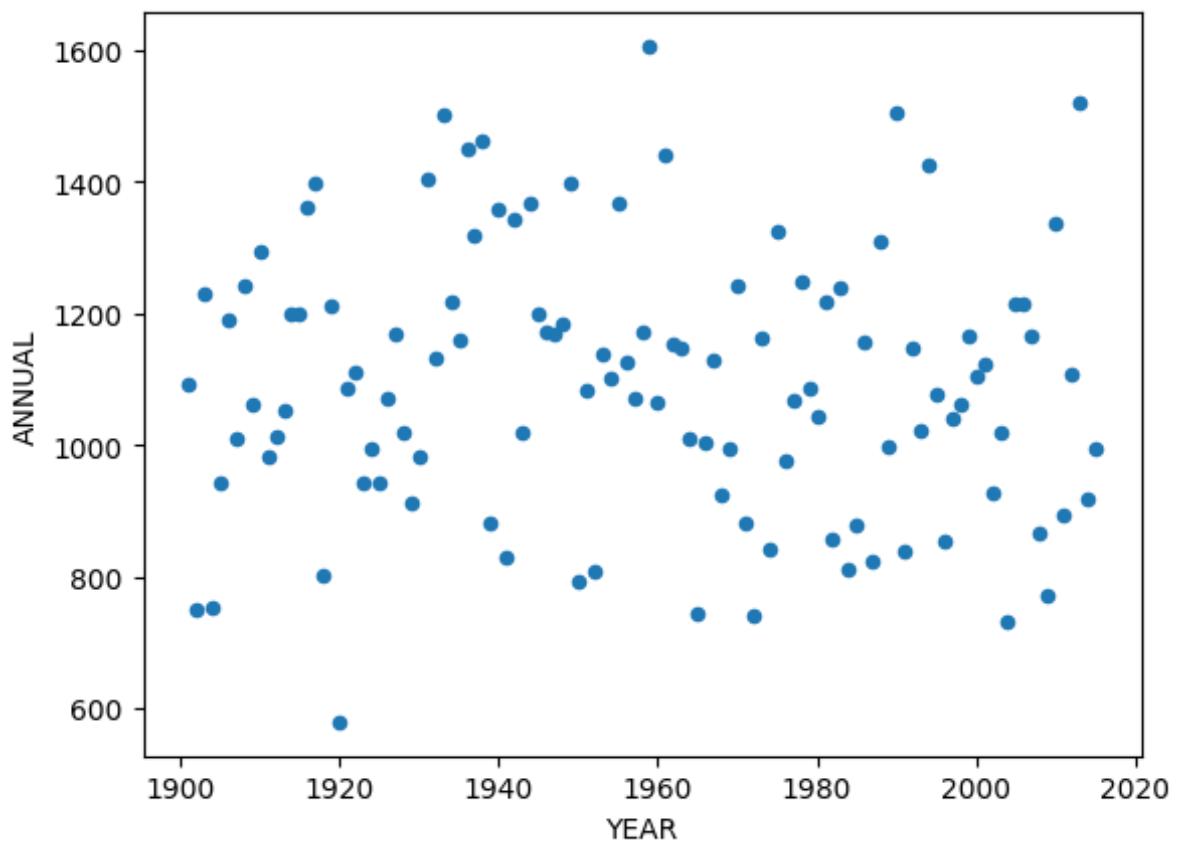
```
In [86]: plt.plot(y)
```

```
Out[86]: [<matplotlib.lines.Line2D at 0x26def99add0>,
<matplotlib.lines.Line2D at 0x26defaaadb50>,
<matplotlib.lines.Line2D at 0x26defaaade50>,
<matplotlib.lines.Line2D at 0x26defaae190>,
<matplotlib.lines.Line2D at 0x26defaae450>,
<matplotlib.lines.Line2D at 0x26defaae990>,
<matplotlib.lines.Line2D at 0x26defaaed90>,
<matplotlib.lines.Line2D at 0x26defaaaf150>,
<matplotlib.lines.Line2D at 0x26defaae590>,
<matplotlib.lines.Line2D at 0x26defaaaf890>,
<matplotlib.lines.Line2D at 0x26defaaafb50>,
<matplotlib.lines.Line2D at 0x26defaaaff90>]
```



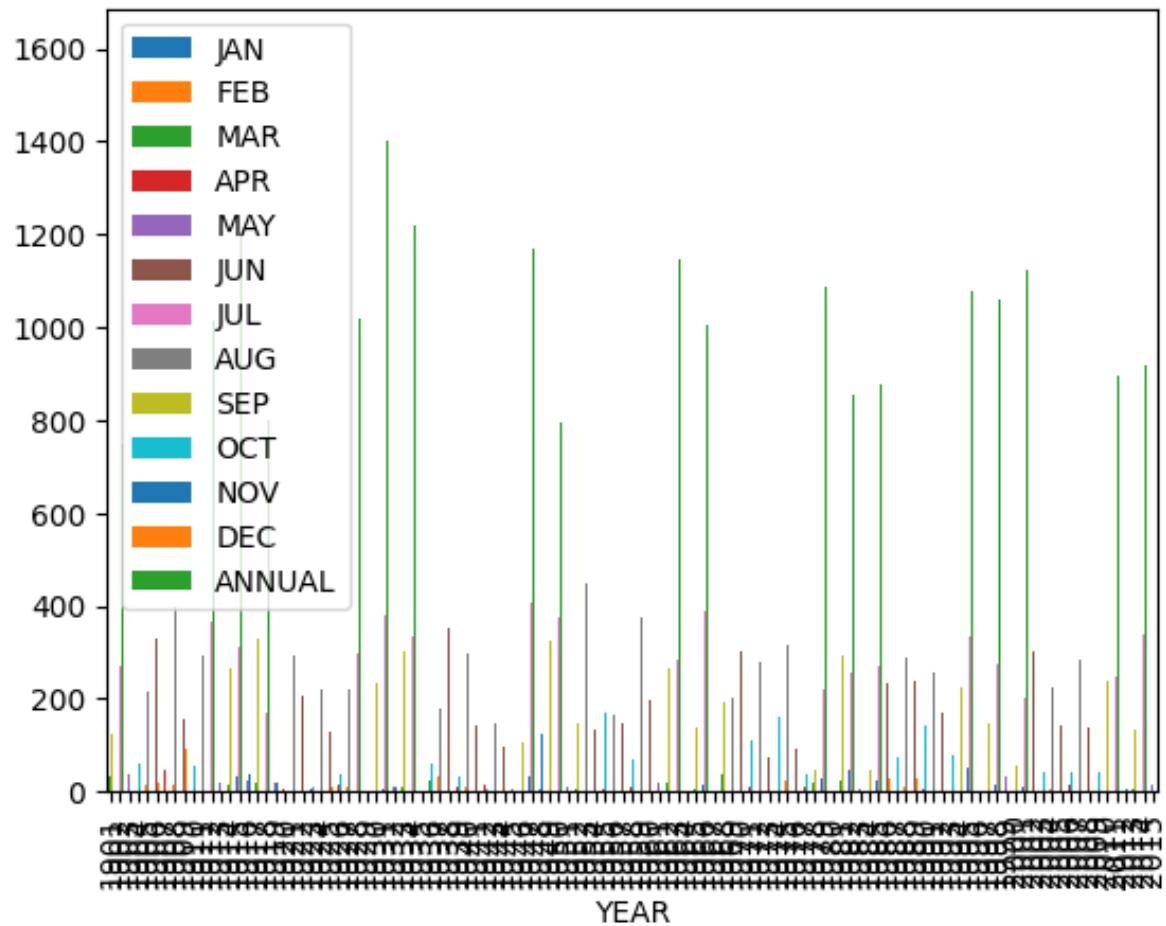
```
In [87]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

```
Out[87]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [88]: x.plot.bar(x="YEAR")
```

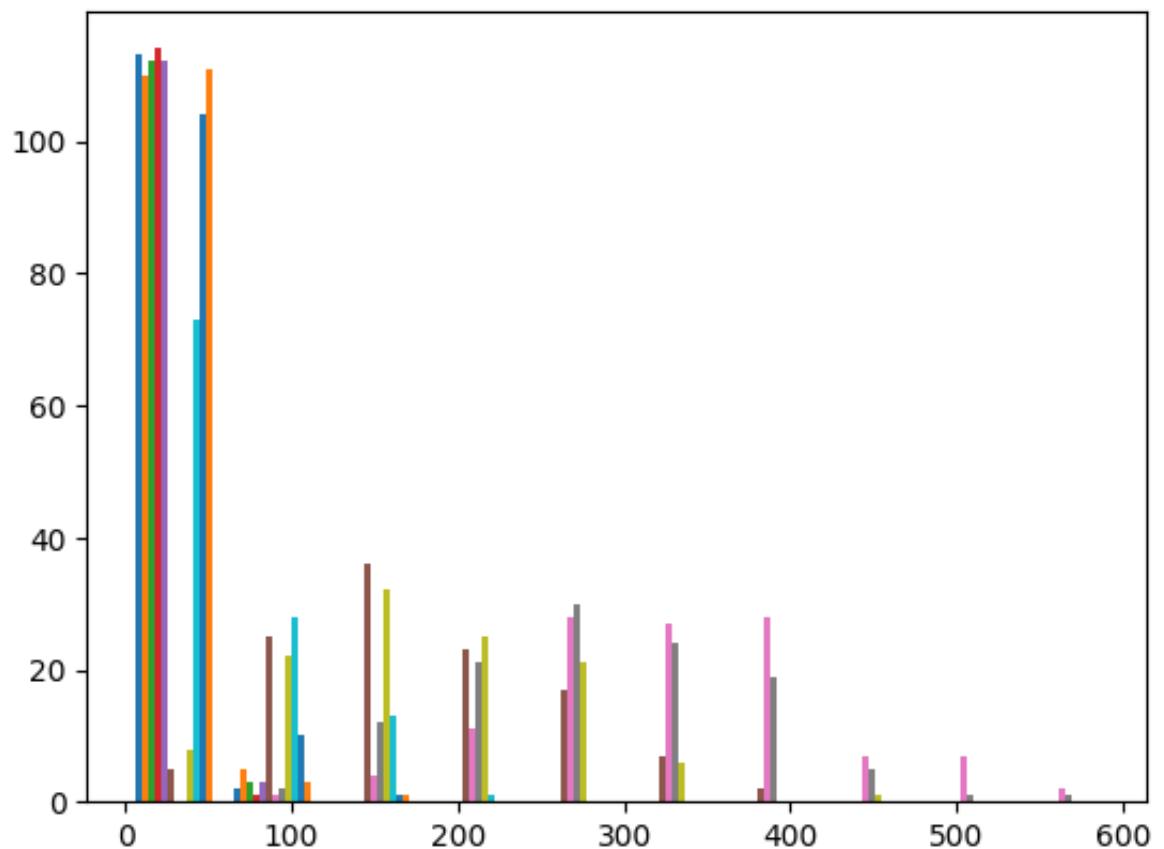
```
Out[88]: <Axes: xlabel='YEAR'>
```



```
In [89]: plt.hist(y)
```

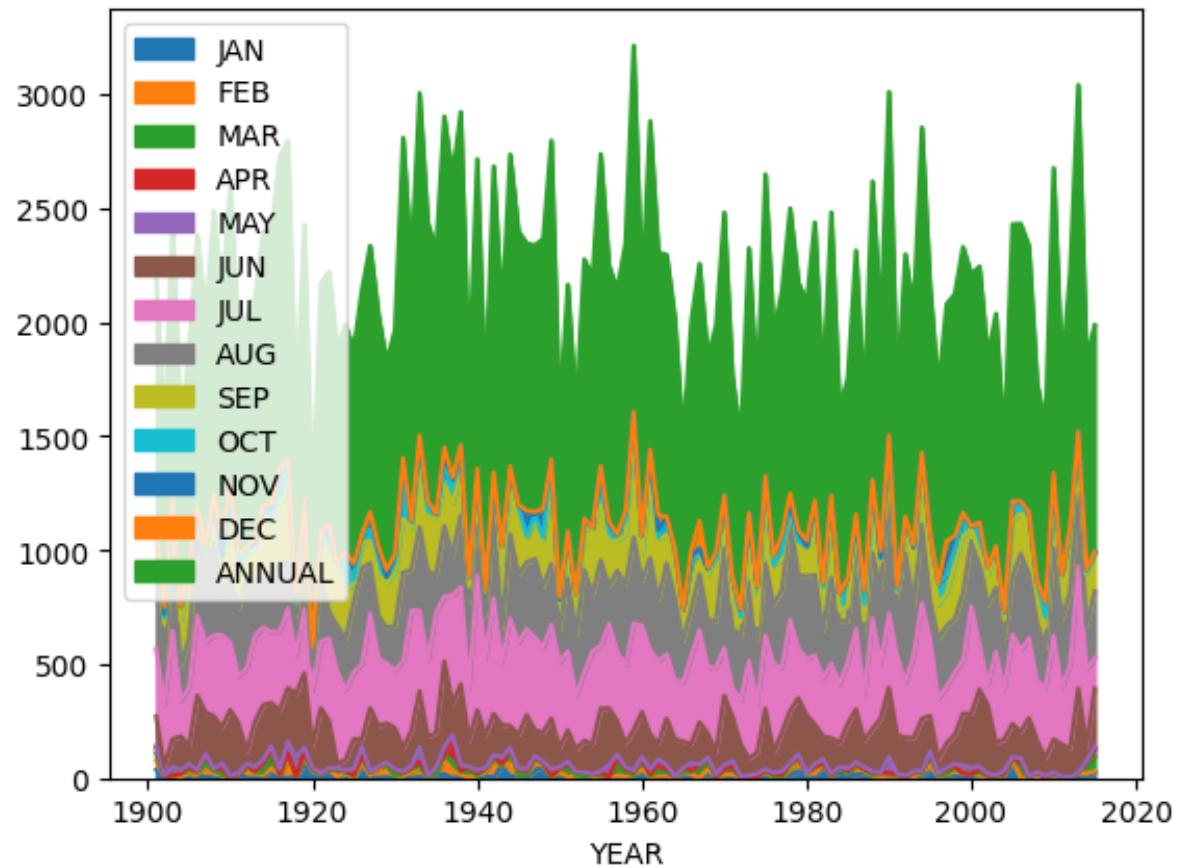
```
Out[89]: (array([[113., 2., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [110., 5., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [112., 3., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [114., 1., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [112., 3., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [ 5., 25., 36., 23., 17., 7., 2., 0., 0.,
       0.],
      [ 0., 1., 4., 11., 28., 27., 28., 7., 7.,
       7.],
      [ 0., 2., 12., 21., 30., 24., 19., 5., 1.,
       1.],
      [ 8., 22., 32., 25., 21., 6., 0., 1., 0.,
       0.],
      [ 73., 28., 13., 1., 0., 0., 0., 0., 0.,
       0.],
      [ 0.,
```

```
[104., 10., 1., 0., 0., 0., 0., 0., 0.,  
0.],  
[111., 3., 1., 0., 0., 0., 0., 0., 0.,  
0.]),  
array([ 0. , 59.1, 118.2, 177.3, 236.4, 295.5, 354.6, 413.7, 47  
2.8,  
531.9, 591. ]),  
<a list of 12 BarContainer objects>)
```



In [90]: `x.plot.area(x="YEAR")`

Out [90]: <Axes: xlabel='YEAR'>



MATATHWADA

In [91]: `x=df[df["SUBDIVISION"]=="MATATHWADA"]`

X

Out [91]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
2737	2737	MATATHWADA	1901	15.8	3.3	32.1	48.5	26.5	193.1	184.1	249.8	74.0
2738	2738	MATATHWADA	1902	1.3	0.0	0.4	7.2	0.8	52.4	120.9	85.2	273.3
2739	2739	MATATHWADA	1903	2.6	0.8	0.0	1.7	58.3	104.4	264.2	281.9	173.3
2740	2740	MATATHWADA	1904	0.0	0.9	12.1	0.3	7.2	79.2	118.4	57.3	339.0
2741	2741	MATATHWADA	1905	1.3	2.0	0.0	6.6	4.8	84.6	94.8	137.6	157.8
...
2847	2847	MATATHWADA	2011	0.0	3.8	0.7	3.5	3.1	79.2	230.1	228.5	90.0
2848	2848	MATATHWADA	2012	0.0	0.0	0.0	0.6	2.3	72.2	161.1	101.4	120.0
2849	2849	MATATHWADA	2013	1.5	9.4	2.6	7.9	6.4	160.9	293.4	136.9	154.1
2850	2850	MATATHWADA	2014	1.4	13.4	79.0	11.9	7.0	30.4	105.0	178.9	84.5
2851	2851	MATATHWADA	2015	10.1	1.6	32.0	39.6	12.3	118.3	27.4	112.2	154.3

115 rows × 20 columns

In [92]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–Dec"],axis=1)`

Out [92]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	A
2737	1901	15.8	3.3	32.1	48.5	26.5	193.1	184.1	249.8	74.0	81.6	0.0	0.0	
2738	1902	1.3	0.0	0.4	7.2	0.8	52.4	120.9	85.2	273.3	61.3	84.4	56.9	
2739	1903	2.6	0.8	0.0	1.7	58.3	104.4	264.2	281.9	173.3	139.9	0.3	5.3	
2740	1904	0.0	0.9	12.1	0.3	7.2	79.2	118.4	57.3	339.0	76.2	0.0	0.0	
2741	1905	1.3	2.0	0.0	6.6	4.8	84.6	94.8	137.6	157.8	15.4	0.9	0.0	
...	
2847	2011	0.0	3.8	0.7	3.5	3.1	79.2	230.1	228.5	90.0	24.8	0.0	0.0	
2848	2012	0.0	0.0	0.0	0.6	2.3	72.2	161.1	101.4	120.0	68.8	0.3	0.0	
2849	2013	1.5	9.4	2.6	7.9	6.4	160.9	293.4	136.9	154.1	94.3	7.4	13.1	
2850	2014	1.4	13.4	79.0	11.9	7.0	30.4	105.0	178.9	84.5	14.2	19.9	3.3	
2851	2015	10.1	1.6	32.0	39.6	12.3	118.3	27.4	112.2	154.3	19.5	4.8	0.0	

115 rows × 14 columns

In [93]:

```
y=x.drop(["YEAR","ANNUAL"],axis=1)  
y
```

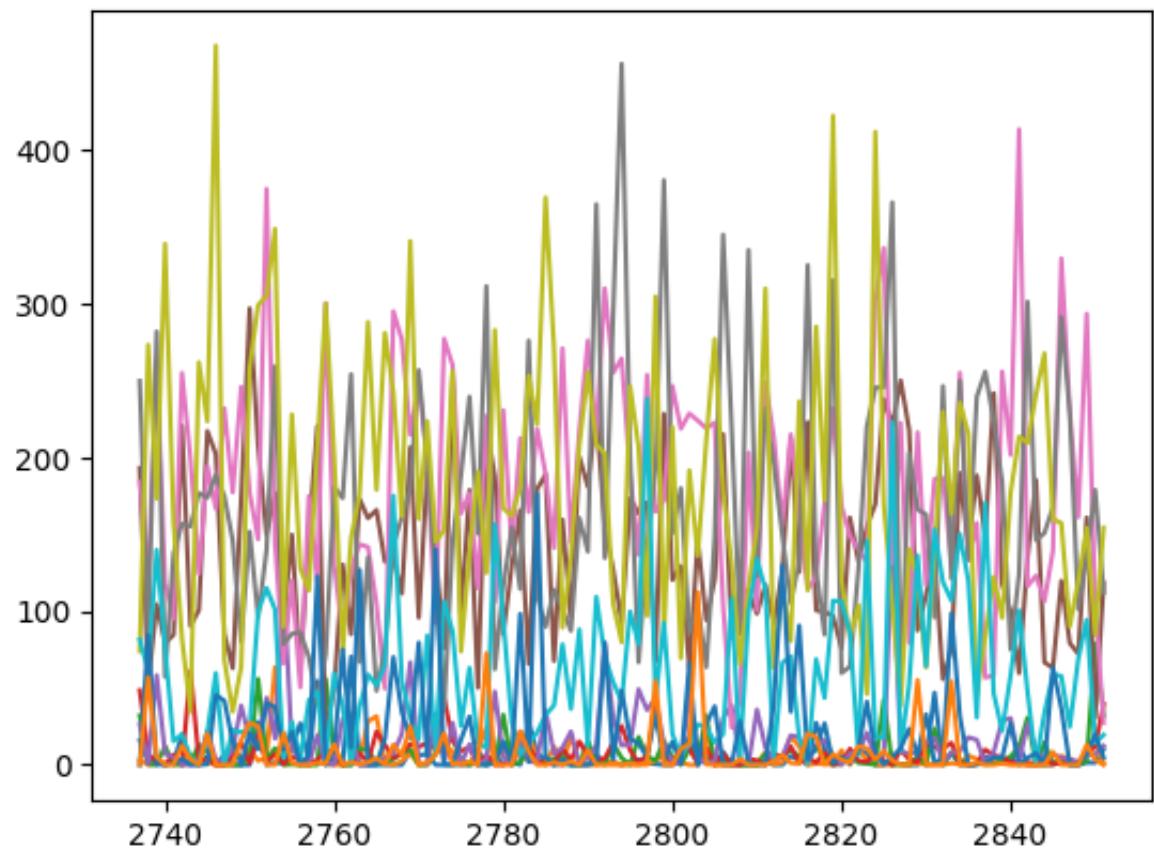
Out [93]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2737	15.8	3.3	32.1	48.5	26.5	193.1	184.1	249.8	74.0	81.6	0.0	0.0
2738	1.3	0.0	0.4	7.2	0.8	52.4	120.9	85.2	273.3	61.3	84.4	56.9
2739	2.6	0.8	0.0	1.7	58.3	104.4	264.2	281.9	173.3	139.9	0.3	5.3
2740	0.0	0.9	12.1	0.3	7.2	79.2	118.4	57.3	339.0	76.2	0.0	0.0
2741	1.3	2.0	0.0	6.6	4.8	84.6	94.8	137.6	157.8	15.4	0.9	0.0
...
2847	0.0	3.8	0.7	3.5	3.1	79.2	230.1	228.5	90.0	24.8	0.0	0.0
2848	0.0	0.0	0.0	0.6	2.3	72.2	161.1	101.4	120.0	68.8	0.3	0.0
2849	1.5	9.4	2.6	7.9	6.4	160.9	293.4	136.9	154.1	94.3	7.4	13.1
2850	1.4	13.4	79.0	11.9	7.0	30.4	105.0	178.9	84.5	14.2	19.9	3.3
2851	10.1	1.6	32.0	39.6	12.3	118.3	27.4	112.2	154.3	19.5	4.8	0.0

115 rows × 12 columns

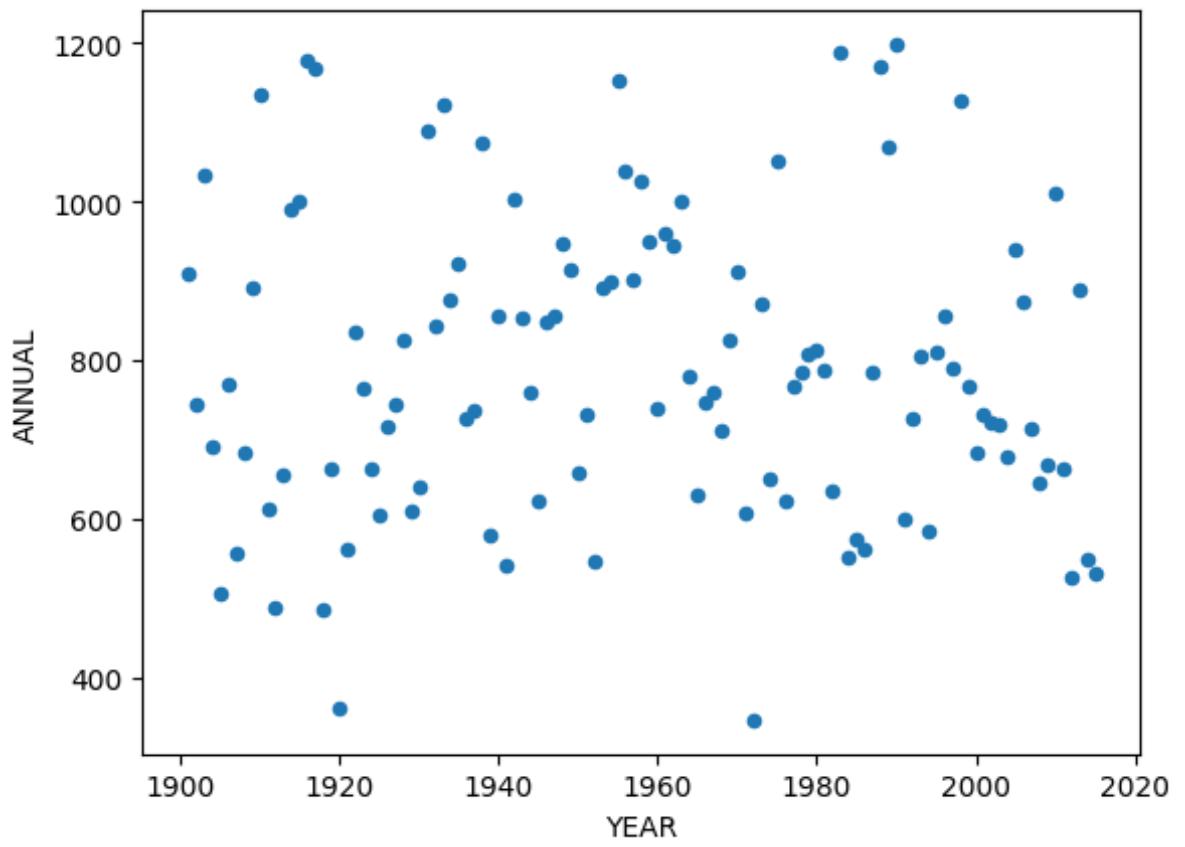
```
In [94]: plt.plot(y)
```

```
Out[94]: [<matplotlib.lines.Line2D at 0x26df1a8add0>,
<matplotlib.lines.Line2D at 0x26df1acf090>,
<matplotlib.lines.Line2D at 0x26df1acf350>,
<matplotlib.lines.Line2D at 0x26df1acf710>,
<matplotlib.lines.Line2D at 0x26df1acfaf0>,
<matplotlib.lines.Line2D at 0x26df1acfce10>,
<matplotlib.lines.Line2D at 0x26df1ad8410>,
<matplotlib.lines.Line2D at 0x26df1ad8850>,
<matplotlib.lines.Line2D at 0x26df1acfcb10>,
<matplotlib.lines.Line2D at 0x26df1ad9010>,
<matplotlib.lines.Line2D at 0x26df1ad9290>,
<matplotlib.lines.Line2D at 0x26df1ad9650>]
```



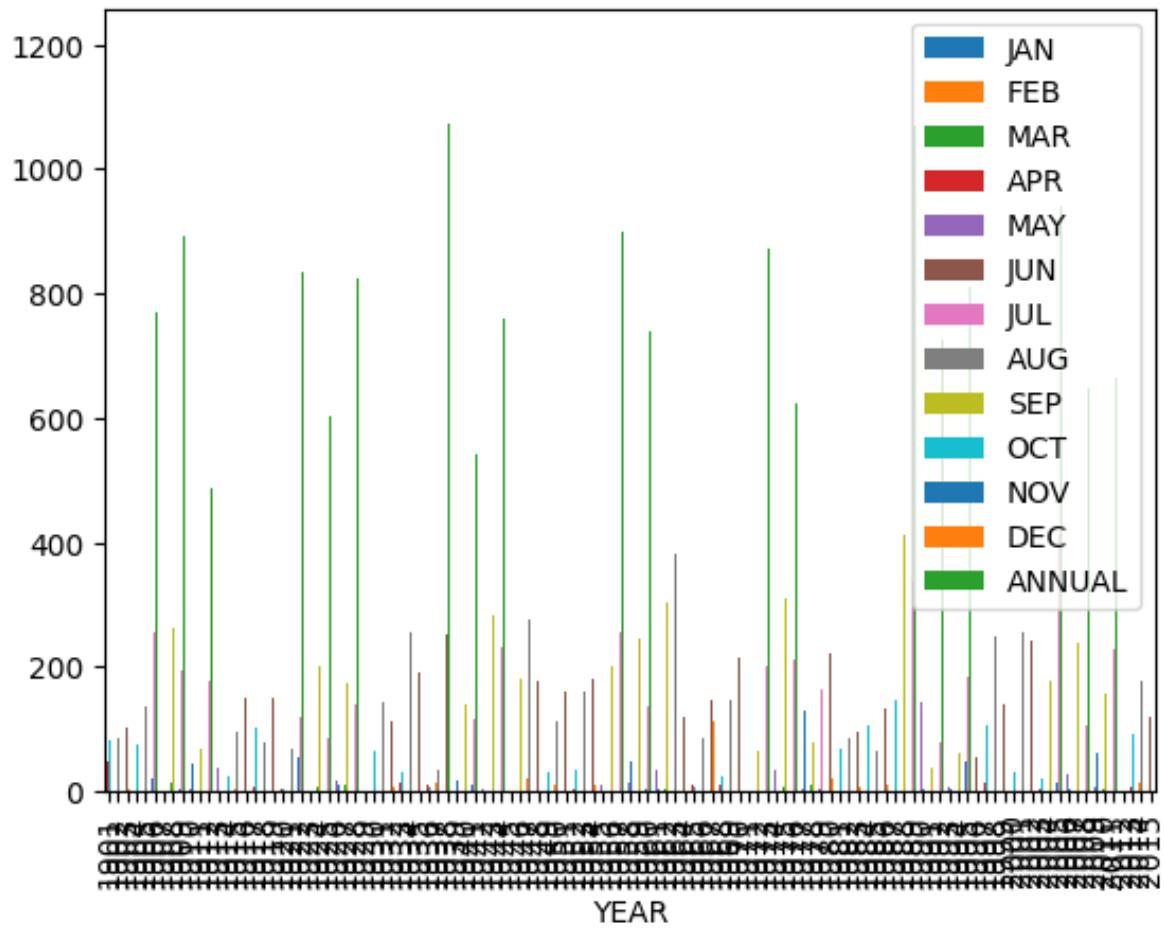
```
In [95]: x.plot.scatter(x="YEAR", y="ANNUAL")
```

```
Out[95]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [96]: x.plot.bar(x="YEAR")
```

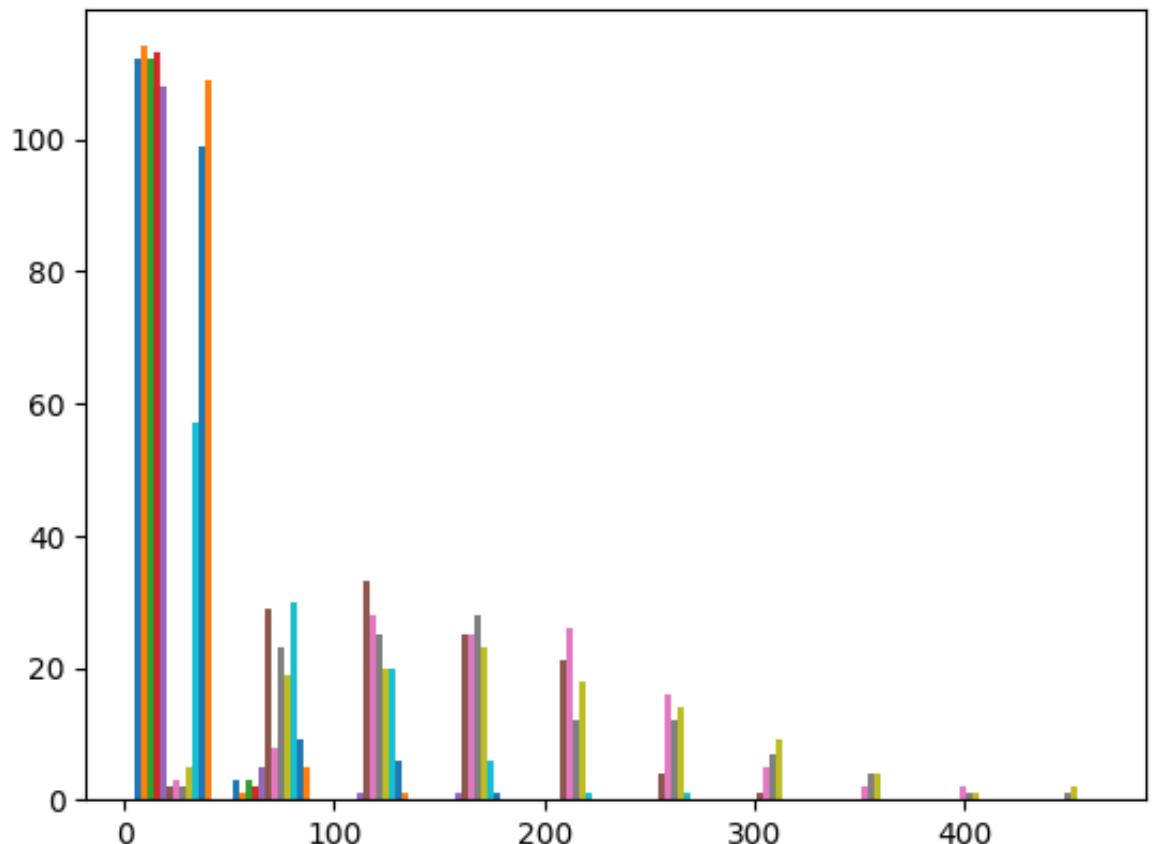
```
Out[96]: <Axes: xlabel='YEAR'>
```



```
In [97]: plt.hist(y)
```

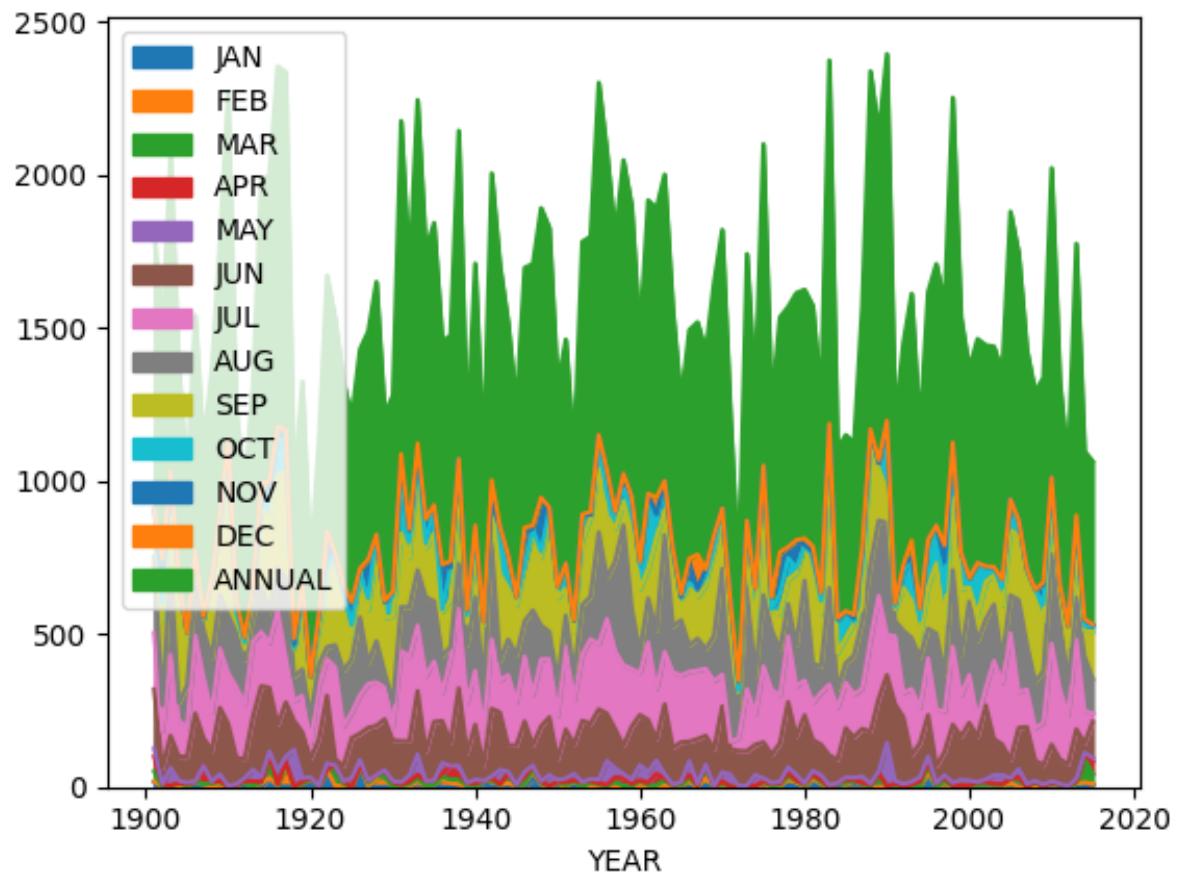
```
Out[97]: (array([[112., 3., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [114., 1., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [112., 3., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [113., 2., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [108., 5., 1., 1., 0., 0., 0., 0., 0., 0.,
       0.],
      [ 2., 29., 33., 25., 21., 4., 1., 0., 0.,
       0.],
      [ 3., 8., 28., 25., 26., 16., 5., 2., 2.,
       0.],
      [ 2., 23., 25., 28., 12., 12., 7., 4., 1.,
       1.],
      [ 5., 19., 20., 23., 18., 14., 9., 4., 1.,
       1.],
      [ 57., 30., 20., 6., 1., 1., 0., 0., 0.,
       0.],
      [ 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.]]),
```

```
[ 99.,   9.,   6.,   1.,   0.,   0.,   0.,   0.,  
 0.],  
[109.,   5.,   1.,   0.,   0.,   0.,   0.,   0.,  
0.]),  
array([  0. ,  46.79,  93.58, 140.37, 187.16, 233.95, 280.74, 32  
7.53,  
 374.32, 421.11, 467.9 ]),  
<a list of 12 BarContainer objects>)
```



In [98]: `x.plot.area(x="YEAR")`

Out [98]: <Axes: xlabel='YEAR'>



MADHYA MAHARASHTRA

In [99]: `x=df[df["SUBDIVISION"]=="MADHYA MAHARASHTRA"]
x`

Out [99]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SE
2622	2622	MADHYA MAHARASHTRA	1901	18.8	0.6	7.7	36.6	30.4	107.7	215.9	194.1	83
2623	2623	MADHYA MAHARASHTRA	1902	7.8	0.0	0.1	5.0	9.8	102.6	210.9	114.5	169
2624	2624	MADHYA MAHARASHTRA	1903	7.6	0.0	0.0	3.2	77.2	86.3	281.8	155.5	142
2625	2625	MADHYA MAHARASHTRA	1904	0.4	4.7	1.7	3.0	18.7	114.6	126.5	59.5	183
2626	2626	MADHYA MAHARASHTRA	1905	0.0	1.2	0.0	2.3	23.6	65.0	252.8	79.0	52
...
2732	2732	MADHYA MAHARASHTRA	2011	0.0	0.3	0.3	5.0	2.9	133.3	261.4	238.1	148
2733	2733	MADHYA MAHARASHTRA	2012	0.0	0.0	0.0	3.0	1.4	67.9	203.0	187.8	129
2734	2734	MADHYA MAHARASHTRA	2013	0.1	5.3	0.8	5.7	6.0	212.4	311.8	147.0	210
2735	2735	MADHYA MAHARASHTRA	2014	3.1	6.2	24.4	7.5	29.8	44.0	277.9	240.3	120
2736	2736	MADHYA MAHARASHTRA	2015	1.4	0.8	41.2	9.6	24.4	177.0	111.7	67.2	146

115 rows × 20 columns

In [100]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out[100]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
2622	1901	18.8	0.6	7.7	36.6	30.4	107.7	215.9	194.1	83.7	68.7	4.4	0.5	360.1
2623	1902	7.8	0.0	0.1	5.0	9.8	102.6	210.9	114.5	169.5	60.4	40.5	62.9	360.1
2624	1903	7.6	0.0	0.0	3.2	77.2	86.3	281.8	155.5	142.3	74.2	7.6	2.2	360.1
2625	1904	0.4	4.7	1.7	3.0	18.7	114.6	126.5	59.5	183.0	91.1	0.0	0.4	360.1
2626	1905	0.0	1.2	0.0	2.3	23.6	65.0	252.8	79.0	52.6	52.9	8.3	0.0	360.1
...	360.1
2732	2011	0.0	0.3	0.3	5.0	2.9	133.3	261.4	238.1	148.4	62.8	0.0	0.0	360.1
2733	2012	0.0	0.0	0.0	3.0	1.4	67.9	203.0	187.8	129.5	95.2	2.2	0.0	360.1
2734	2013	0.1	5.3	0.8	5.7	6.0	212.4	311.8	147.0	210.3	57.8	4.0	1.3	360.1
2735	2014	3.1	6.2	24.4	7.5	29.8	44.0	277.9	240.3	120.4	38.5	32.8	13.1	360.1
2736	2015	1.4	0.8	41.2	9.6	24.4	177.0	111.7	67.2	146.6	48.3	16.2	0.1	360.1

115 rows × 14 columns

In [101]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

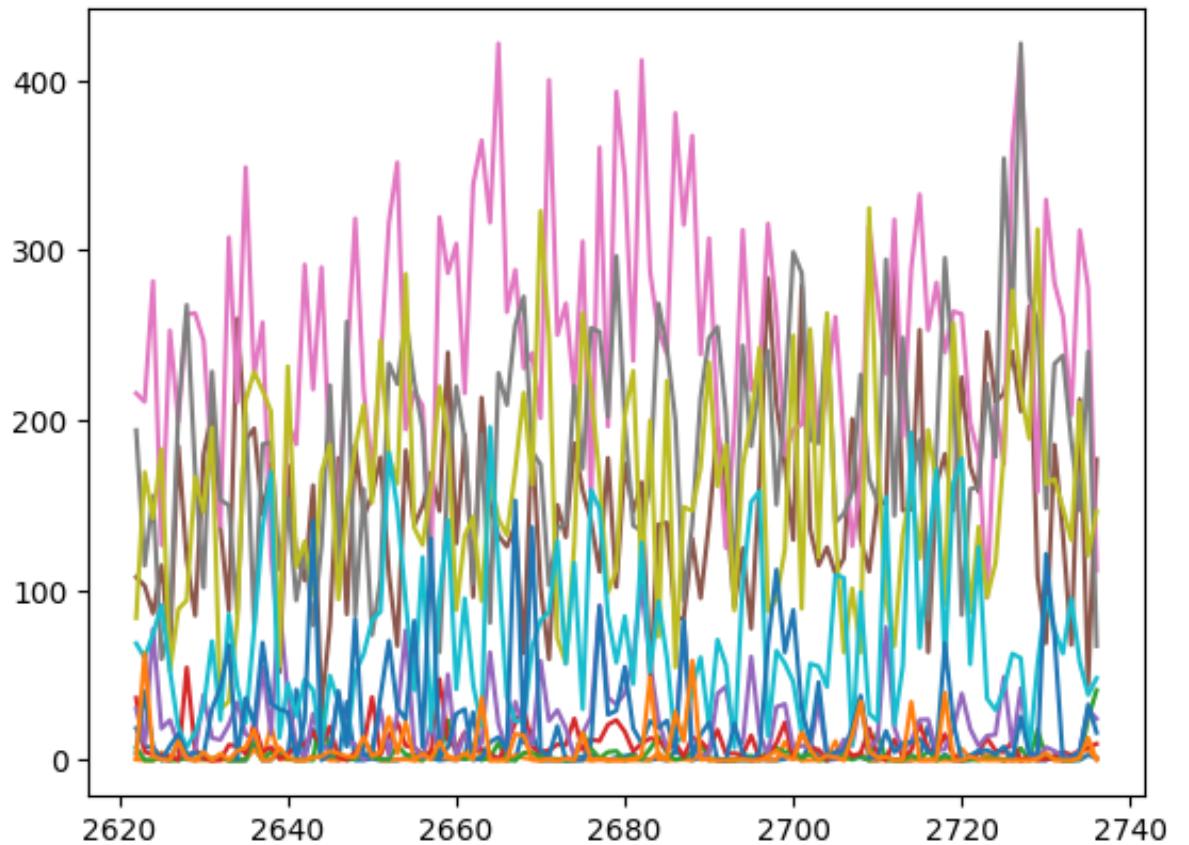
Out[101]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
2622	18.8	0.6	7.7	36.6	30.4	107.7	215.9	194.1	83.7	68.7	4.4	0.5	360.1
2623	7.8	0.0	0.1	5.0	9.8	102.6	210.9	114.5	169.5	60.4	40.5	62.9	360.1
2624	7.6	0.0	0.0	3.2	77.2	86.3	281.8	155.5	142.3	74.2	7.6	2.2	360.1
2625	0.4	4.7	1.7	3.0	18.7	114.6	126.5	59.5	183.0	91.1	0.0	0.4	360.1
2626	0.0	1.2	0.0	2.3	23.6	65.0	252.8	79.0	52.6	52.9	8.3	0.0	360.1
...	360.1
2732	0.0	0.3	0.3	5.0	2.9	133.3	261.4	238.1	148.4	62.8	0.0	0.0	360.1
2733	0.0	0.0	0.0	3.0	1.4	67.9	203.0	187.8	129.5	95.2	2.2	0.0	360.1
2734	0.1	5.3	0.8	5.7	6.0	212.4	311.8	147.0	210.3	57.8	4.0	1.3	360.1
2735	3.1	6.2	24.4	7.5	29.8	44.0	277.9	240.3	120.4	38.5	32.8	13.1	360.1
2736	1.4	0.8	41.2	9.6	24.4	177.0	111.7	67.2	146.6	48.3	16.2	0.1	360.1

115 rows × 12 columns

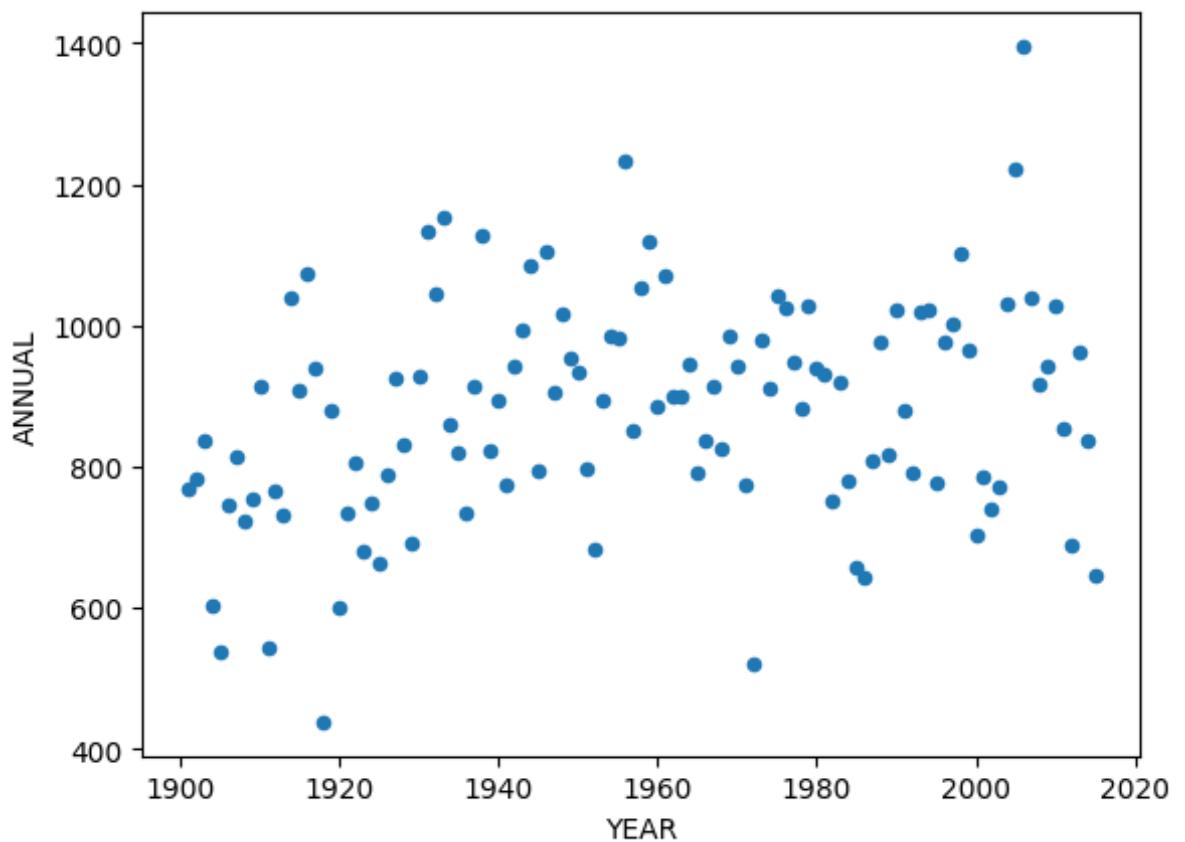
```
In [102]: plt.plot(y)
```

```
Out[102]: [
```



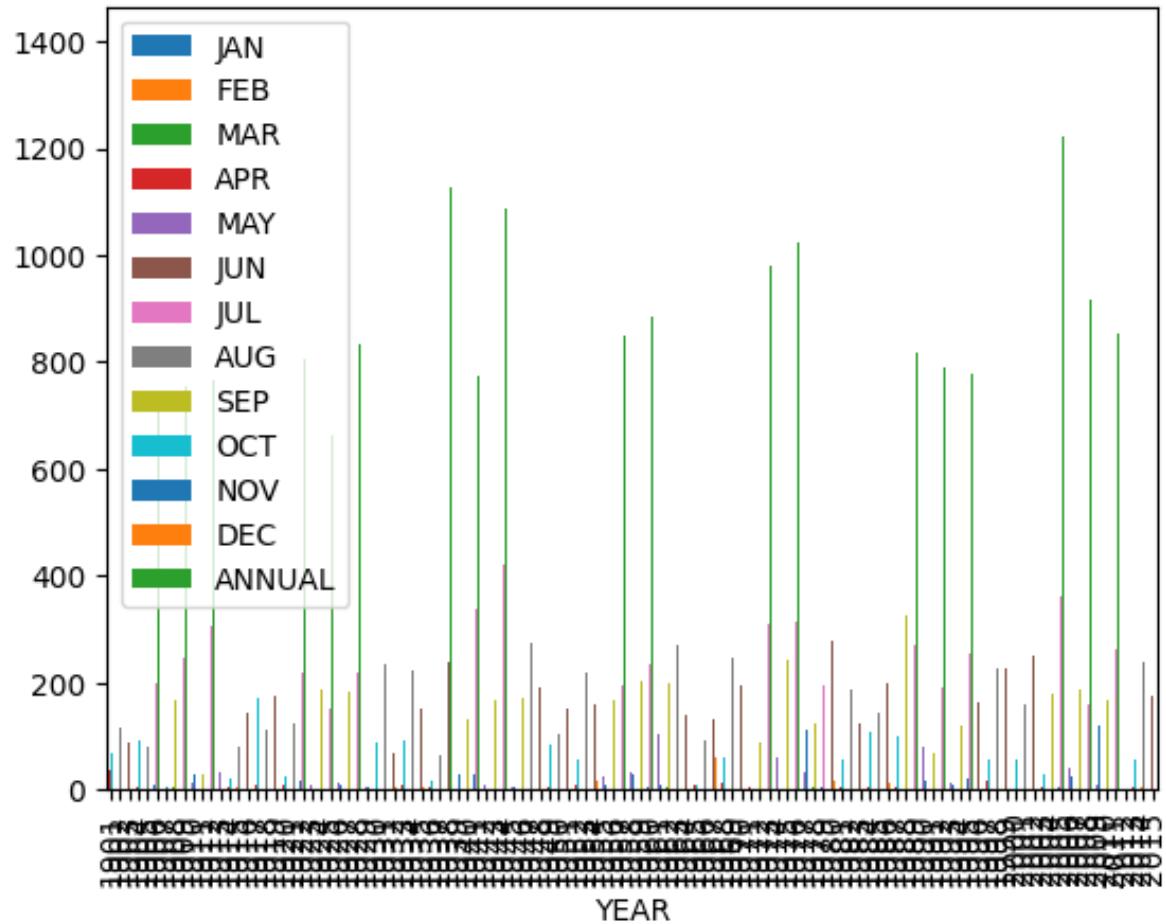
```
In [103]: x.plot.scatter(x="YEAR", y="ANNUAL")
```

```
Out[103]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [104]: x.plot.bar(x="YEAR")
```

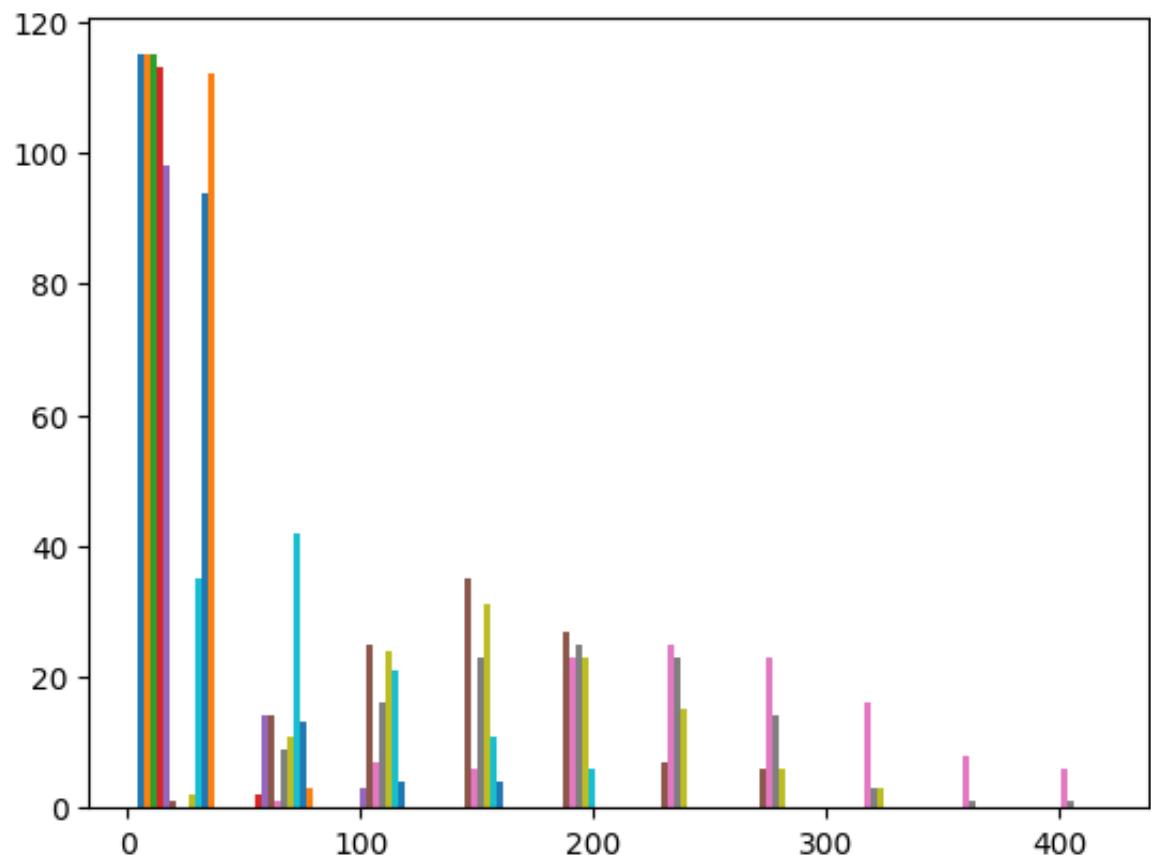
```
Out[104]: <Axes: xlabel='YEAR'>
```



```
In [105]: plt.hist(y)
```

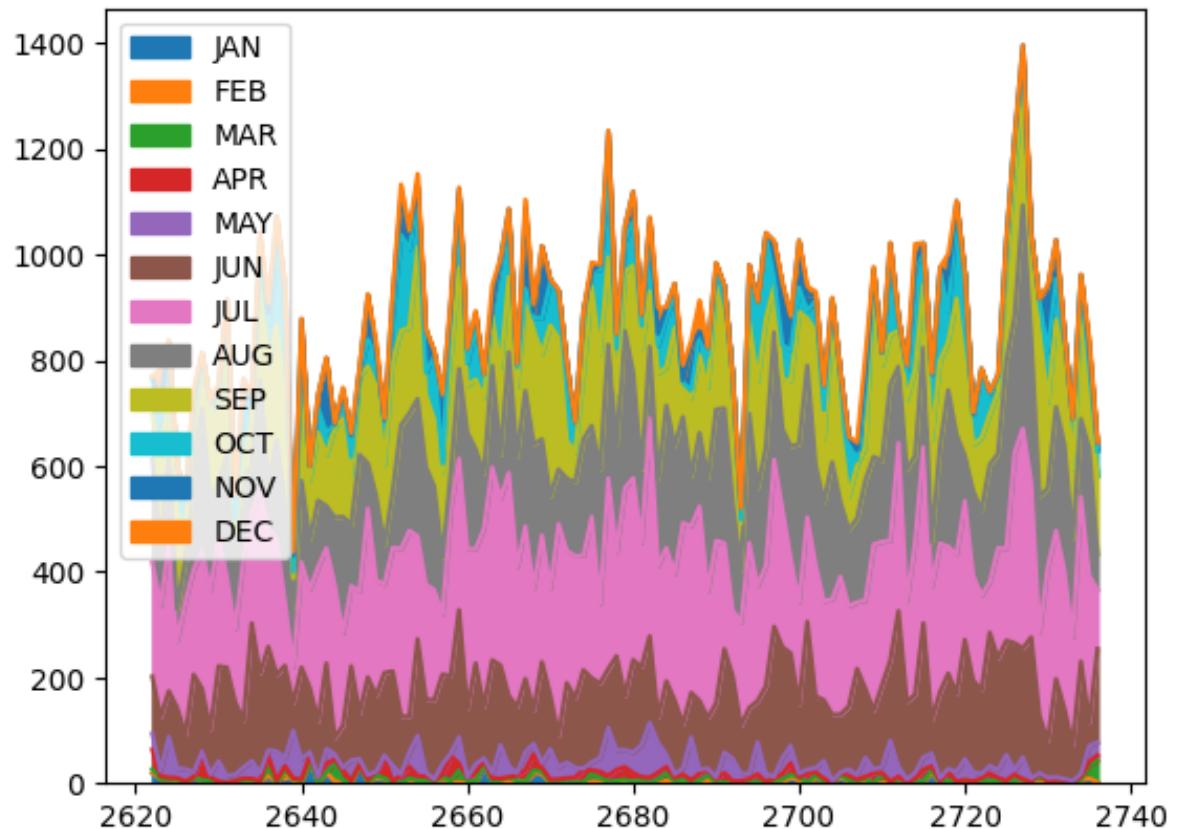
```
Out[105]: (array([[115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [113., 2., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [98., 14., 3., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [1., 14., 25., 35., 27., 7., 6., 0., 0.,
       0.],
      [0., 1., 7., 6., 23., 25., 23., 16., 8.,
       6.],
      [0., 9., 16., 23., 25., 23., 14., 3., 1.,
       1.],
      [2., 11., 24., 31., 23., 15., 6., 3., 0.,
       0.],
      [35., 42., 21., 11., 6., 0., 0., 0., 0.,
       0.],
      [0.,
```

```
[ 94.,  13.,   4.,   4.,   0.,   0.,   0.,   0.,   0.,
 0.],  
[112.,   3.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,
 0.]),  
array([  0. ,  42.17,  84.34, 126.51, 168.68, 210.85, 253.02, 29
5.19,
 337.36, 379.53, 421.7 ]),  
<a list of 12 BarContainer objects>)
```



```
In [106]: y.plot.area()
```

```
Out[106]: <Axes: >
```



KONKAN & GOA

In [107]: `x=df[df["SUBDIVISION"]=="KONKAN & GOA"]`

X

Out[107]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	S
2507	2507	KONKAN & GOA	1901	5.6	0.1	0.4	35.7	19.9	746.1	1075.5	748.0	11
2508	2508	KONKAN & GOA	1902	0.3	0.0	0.0	0.4	7.6	428.2	943.6	515.1	61
2509	2509	KONKAN & GOA	1903	0.0	0.0	0.1	0.0	201.1	470.5	1298.6	673.9	28
2510	2510	KONKAN & GOA	1904	0.0	0.1	6.6	6.3	4.6	975.8	771.7	321.3	21
2511	2511	KONKAN & GOA	1905	0.1	0.1	0.0	0.4	8.6	293.7	770.6	305.5	20
...
2617	2617	KONKAN & GOA	2011	0.0	0.0	0.0	3.4	1.1	857.0	1384.1	987.9	46
2618	2618	KONKAN & GOA	2012	0.0	0.0	0.0	0.6	1.1	633.0	928.5	762.5	51
2619	2619	KONKAN & GOA	2013	1.8	5.4	0.1	0.1	18.5	1028.3	1478.5	497.6	34
2620	2620	KONKAN & GOA	2014	1.3	5.3	1.8	0.7	21.3	238.2	1293.2	658.0	41
2621	2621	KONKAN & GOA	2015	2.7	0.0	36.8	3.6	11.3	764.0	526.5	377.3	24

115 rows × 20 columns

In [108]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X"])`

Out[108]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2507	1901	5.6	0.1	0.4	35.7	19.9	746.1	1075.5	748.0	117.4	38.6	5.4	0.1
2508	1902	0.3	0.0	0.0	0.4	7.6	428.2	943.6	515.1	613.8	74.3	42.7	48.0
2509	1903	0.0	0.0	0.1	0.0	201.1	470.5	1298.6	673.9	285.1	140.8	12.4	1.7
2510	1904	0.0	0.1	6.6	6.3	4.6	975.8	771.7	321.3	217.0	90.3	0.0	0.0
2511	1905	0.1	0.1	0.0	0.4	8.6	293.7	770.6	305.5	208.3	83.5	12.1	0.0
...
2617	2011	0.0	0.0	0.0	3.4	1.1	857.0	1384.1	987.9	468.3	120.3	3.1	0.0
2618	2012	0.0	0.0	0.0	0.6	1.1	633.0	928.5	762.5	515.3	175.1	2.3	0.0
2619	2013	1.8	5.4	0.1	0.1	18.5	1028.3	1478.5	497.6	340.7	149.3	2.1	1.5
2620	2014	1.3	5.3	1.8	0.7	21.3	238.2	1293.2	658.0	419.5	98.7	8.0	11.7
2621	2015	2.7	0.0	36.8	3.6	11.3	764.0	526.5	377.3	240.9	91.4	27.3	0.0

115 rows × 14 columns

In [109]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

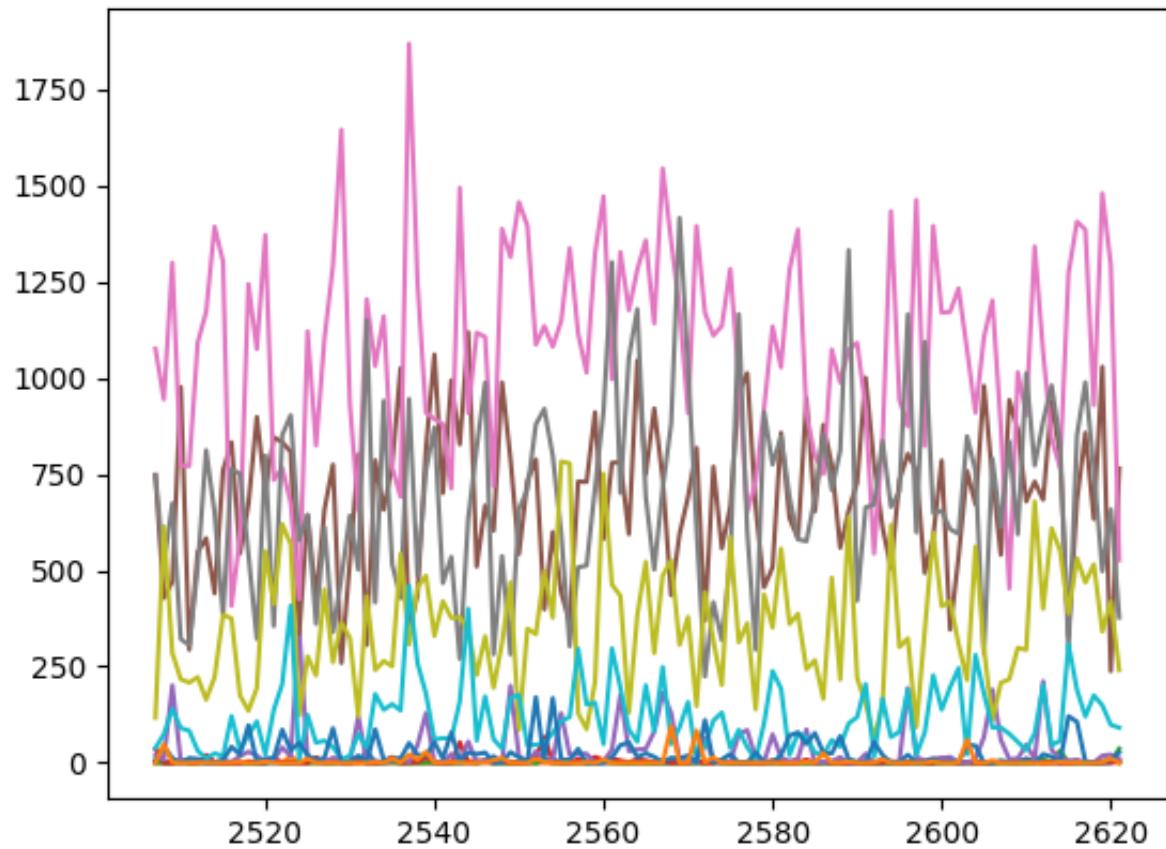
Out[109]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2507	5.6	0.1	0.4	35.7	19.9	746.1	1075.5	748.0	117.4	38.6	5.4	0.1
2508	0.3	0.0	0.0	0.4	7.6	428.2	943.6	515.1	613.8	74.3	42.7	48.0
2509	0.0	0.0	0.1	0.0	201.1	470.5	1298.6	673.9	285.1	140.8	12.4	1.7
2510	0.0	0.1	6.6	6.3	4.6	975.8	771.7	321.3	217.0	90.3	0.0	0.0
2511	0.1	0.1	0.0	0.4	8.6	293.7	770.6	305.5	208.3	83.5	12.1	0.0
...
2617	0.0	0.0	0.0	3.4	1.1	857.0	1384.1	987.9	468.3	120.3	3.1	0.0
2618	0.0	0.0	0.0	0.6	1.1	633.0	928.5	762.5	515.3	175.1	2.3	0.0
2619	1.8	5.4	0.1	0.1	18.5	1028.3	1478.5	497.6	340.7	149.3	2.1	1.5
2620	1.3	5.3	1.8	0.7	21.3	238.2	1293.2	658.0	419.5	98.7	8.0	11.7
2621	2.7	0.0	36.8	3.6	11.3	764.0	526.5	377.3	240.9	91.4	27.3	0.0

115 rows × 12 columns

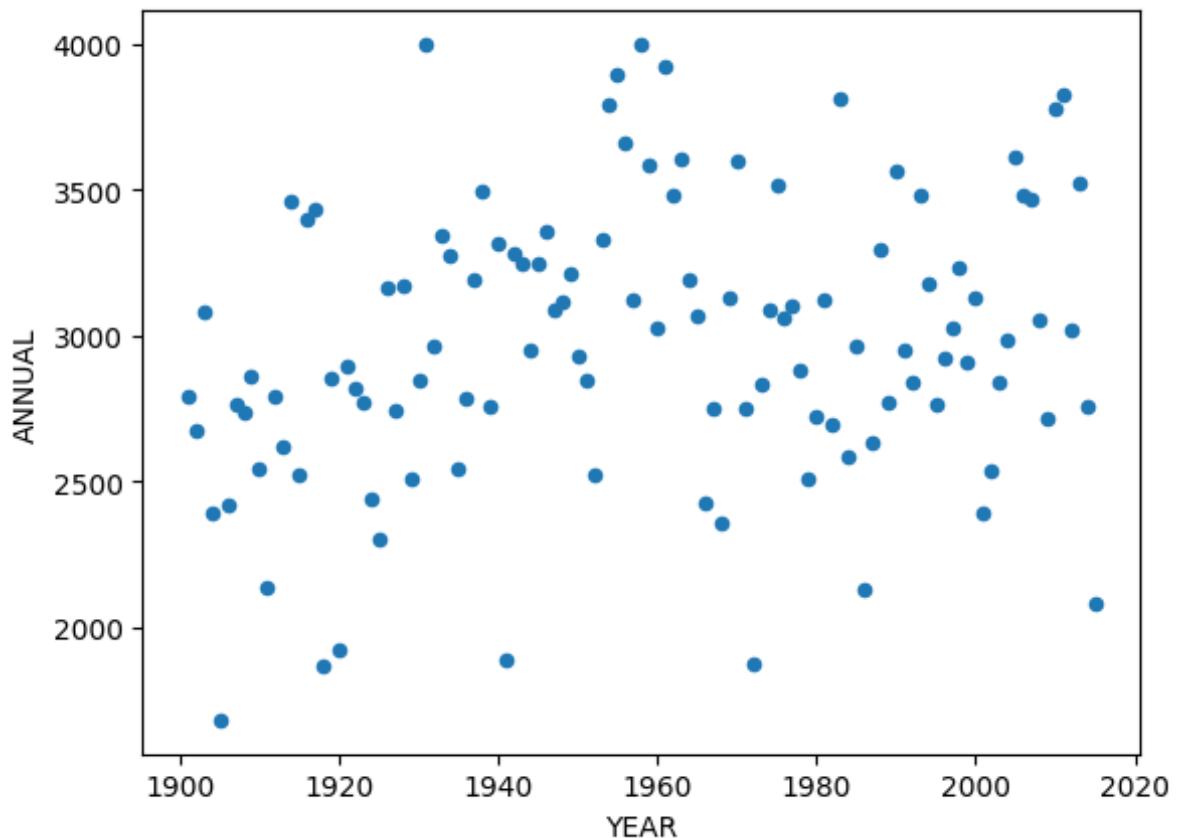
```
In [110]: plt.plot(y)
```

```
Out[110]: [<matplotlib.lines.Line2D at 0x26df4d82dd0>,
 <matplotlib.lines.Line2D at 0x26df4eeddd0>,
 <matplotlib.lines.Line2D at 0x26df4eee110>,
 <matplotlib.lines.Line2D at 0x26df4eee510>,
 <matplotlib.lines.Line2D at 0x26df4eee850>,
 <matplotlib.lines.Line2D at 0x26df4eeec10>,
 <matplotlib.lines.Line2D at 0x26df4eef210>,
 <matplotlib.lines.Line2D at 0x26df4eef490>,
 <matplotlib.lines.Line2D at 0x26df4eee950>,
 <matplotlib.lines.Line2D at 0x26df4eeed90>,
 <matplotlib.lines.Line2D at 0x26df4eec110>,
 <matplotlib.lines.Line2D at 0x26df4efc3d0>]
```



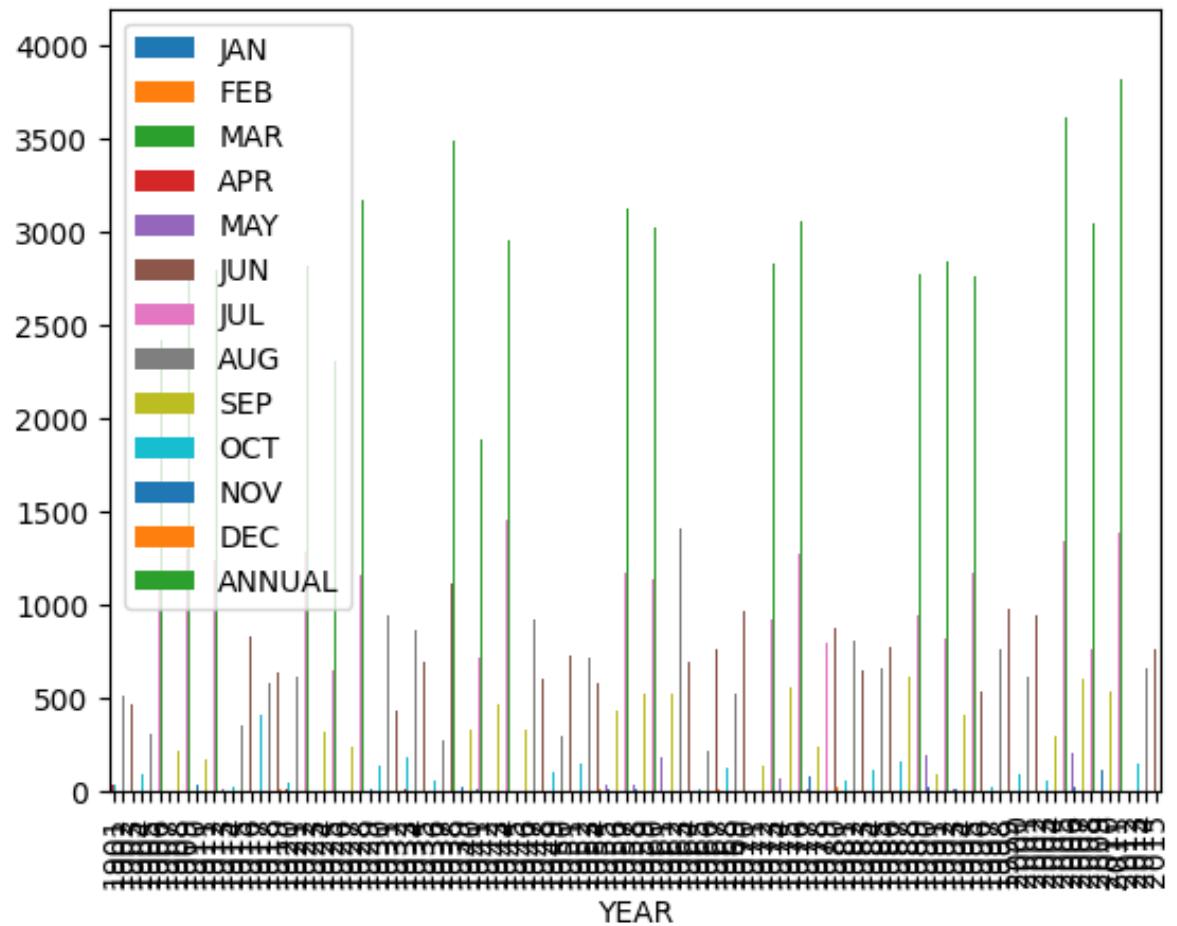
```
In [111]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

```
Out[111]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



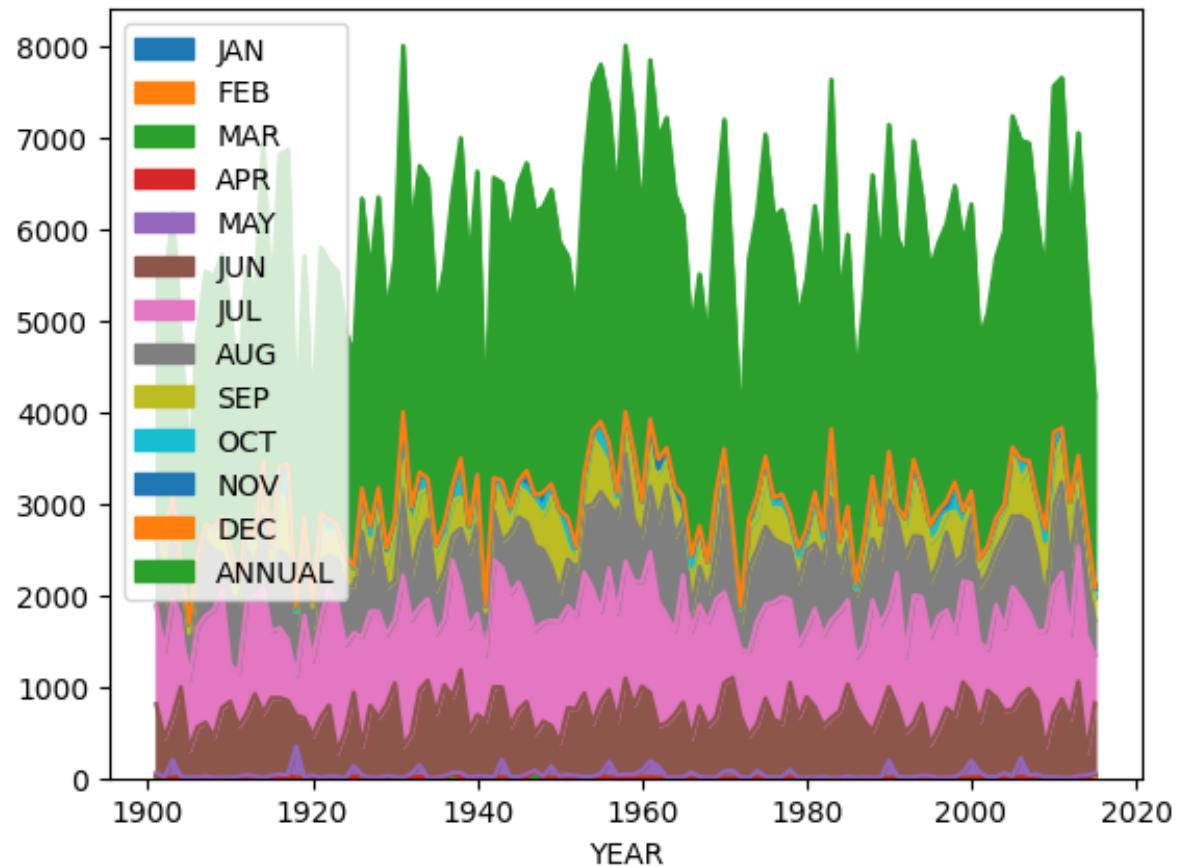
In [112]: `x.plot.bar(x="YEAR")`

Out[112]: <Axes: xlabel='YEAR'>



```
In [113]: x.plot.area(x="YEAR")
```

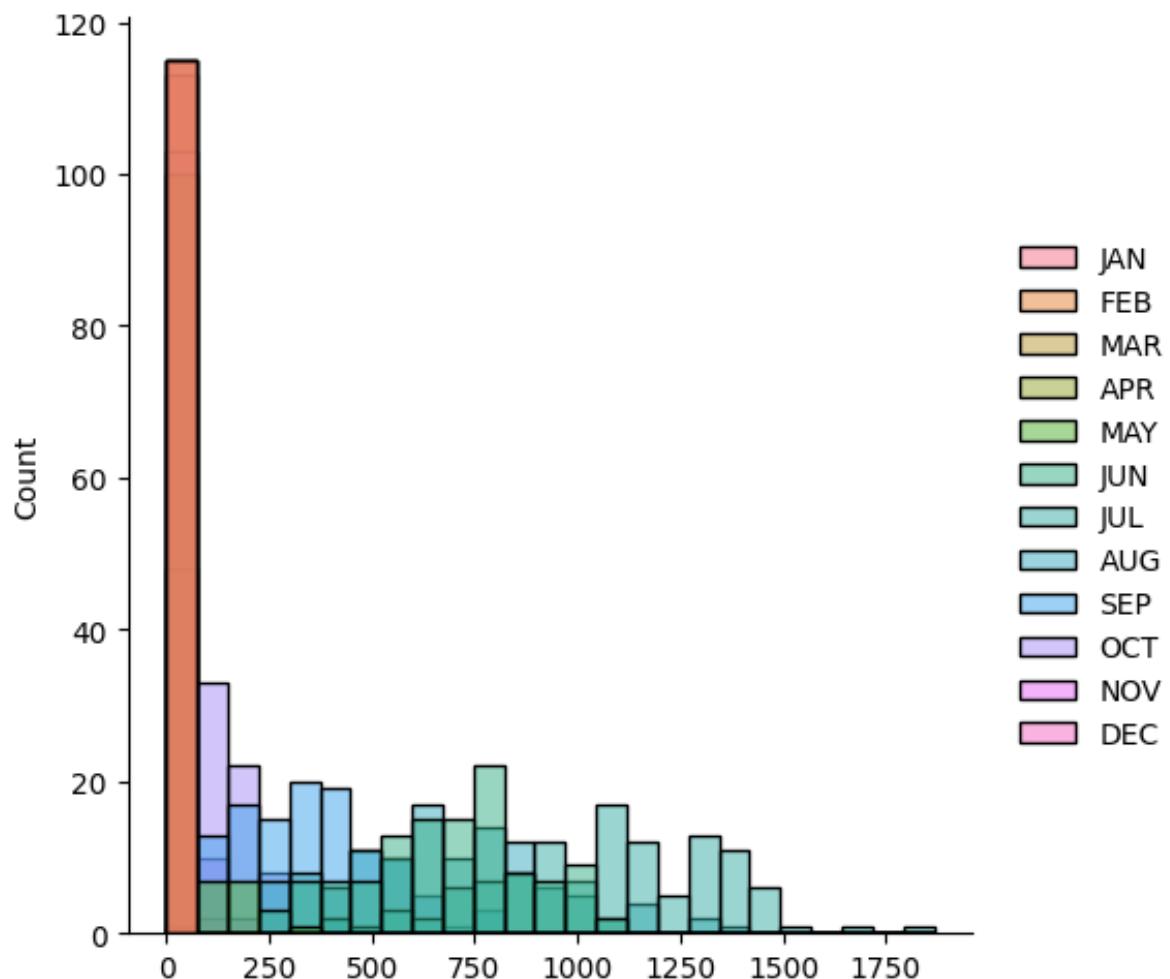
```
Out[113]: <Axes: xlabel='YEAR'>
```



In [114]: `sns.displot(y)`

```
C:\Users\Gokul Jana\AppData\Local\Programs\Python\Python311\Lib\site-packages\seaborn\axisgrid.py:118: UserWarning: The figure layout has changed to tight
  self._figure.tight_layout(*args, **kwargs)
```

Out[114]: <seaborn.axisgrid.FacetGrid at 0x26df2c2ed50>



SAURASHTRA & KUTCH

```
In [115]: x=df[df["SUBDIVISION"]=="SAURASHTRA & KUTCH"]  
x
```

Out[115]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
2392	2392	SAURASHTRA & KUTCH	1901	1.9	0.0	0.1	0.2	3.2	9.1	87.8	62.5	12.0
2393	2393	SAURASHTRA & KUTCH	1902	0.1	0.0	0.0	0.5	1.1	14.4	92.9	160.0	123.9
2394	2394	SAURASHTRA & KUTCH	1903	0.5	0.0	1.7	0.0	3.1	10.5	337.9	96.1	61.9
2395	2395	SAURASHTRA & KUTCH	1904	1.4	5.8	17.5	0.0	0.0	9.5	111.2	9.4	28.9
2396	2396	SAURASHTRA & KUTCH	1905	1.5	1.0	0.6	0.4	0.0	6.4	254.5	12.3	12.8
...
2502	2502	SAURASHTRA & KUTCH	2011	0.0	1.4	0.0	0.0	0.0	26.0	212.7	290.9	210.1
2503	2503	SAURASHTRA & KUTCH	2012	0.0	0.0	0.0	0.2	0.1	22.4	34.7	34.5	228.5
2504	2504	SAURASHTRA & KUTCH	2013	1.7	0.2	0.1	8.5	0.1	127.7	171.2	83.3	260.2
2505	2505	SAURASHTRA & KUTCH	2014	0.3	0.0	0.1	0.5	2.1	17.3	137.7	118.8	99.2
2506	2506	SAURASHTRA & KUTCH	2015	0.9	0.0	4.4	2.1	0.8	112.6	226.7	10.6	79.9

115 rows × 20 columns

In [116]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out[116]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
2392	1901	1.9	0.0	0.1	0.2	3.2	9.1	87.8	62.5	12.0	3.8	0.0	0.7	115.0
2393	1902	0.1	0.0	0.0	0.5	1.1	14.4	92.9	160.0	123.9	1.5	0.1	6.5	210.1
2394	1903	0.5	0.0	1.7	0.0	3.1	10.5	337.9	96.1	61.9	11.1	0.0	0.0	337.9
2395	1904	1.4	5.8	17.5	0.0	0.0	9.5	111.2	9.4	28.9	0.3	1.7	0.0	111.2
2396	1905	1.5	1.0	0.6	0.4	0.0	6.4	254.5	12.3	12.8	0.4	0.0	0.0	254.5
...
2502	2011	0.0	1.4	0.0	0.0	0.0	26.0	212.7	290.9	210.1	1.2	0.1	0.0	290.9
2503	2012	0.0	0.0	0.0	0.2	0.1	22.4	34.7	34.5	228.5	2.4	0.0	1.0	228.5
2504	2013	1.7	0.2	0.1	8.5	0.1	127.7	171.2	83.3	260.2	28.6	0.0	0.0	171.2
2505	2014	0.3	0.0	0.1	0.5	2.1	17.3	137.7	118.8	99.2	5.2	2.7	0.0	137.7
2506	2015	0.9	0.0	4.4	2.1	0.8	112.6	226.7	10.6	79.9	3.3	0.3	0.0	226.7

115 rows × 14 columns

In [117]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

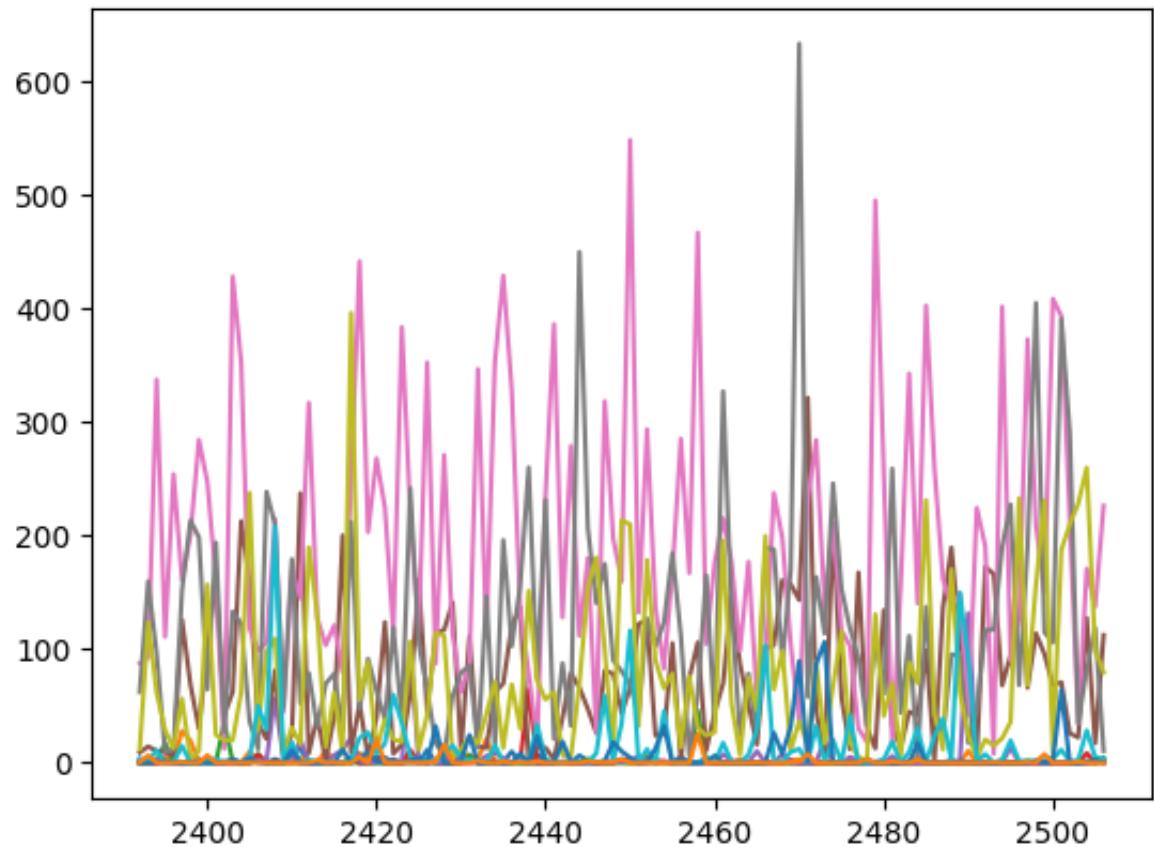
Out[117]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
2392	1.9	0.0	0.1	0.2	3.2	9.1	87.8	62.5	12.0	3.8	0.0	0.7	115.0
2393	0.1	0.0	0.0	0.5	1.1	14.4	92.9	160.0	123.9	1.5	0.1	6.5	210.1
2394	0.5	0.0	1.7	0.0	3.1	10.5	337.9	96.1	61.9	11.1	0.0	0.0	337.9
2395	1.4	5.8	17.5	0.0	0.0	9.5	111.2	9.4	28.9	0.3	1.7	0.0	111.2
2396	1.5	1.0	0.6	0.4	0.0	6.4	254.5	12.3	12.8	0.4	0.0	0.0	254.5
...
2502	0.0	1.4	0.0	0.0	0.0	26.0	212.7	290.9	210.1	1.2	0.1	0.0	290.9
2503	0.0	0.0	0.0	0.2	0.1	22.4	34.7	34.5	228.5	2.4	0.0	1.0	228.5
2504	1.7	0.2	0.1	8.5	0.1	127.7	171.2	83.3	260.2	28.6	0.0	0.0	171.2
2505	0.3	0.0	0.1	0.5	2.1	17.3	137.7	118.8	99.2	5.2	2.7	0.0	137.7
2506	0.9	0.0	4.4	2.1	0.8	112.6	226.7	10.6	79.9	3.3	0.3	0.0	226.7

115 rows × 12 columns

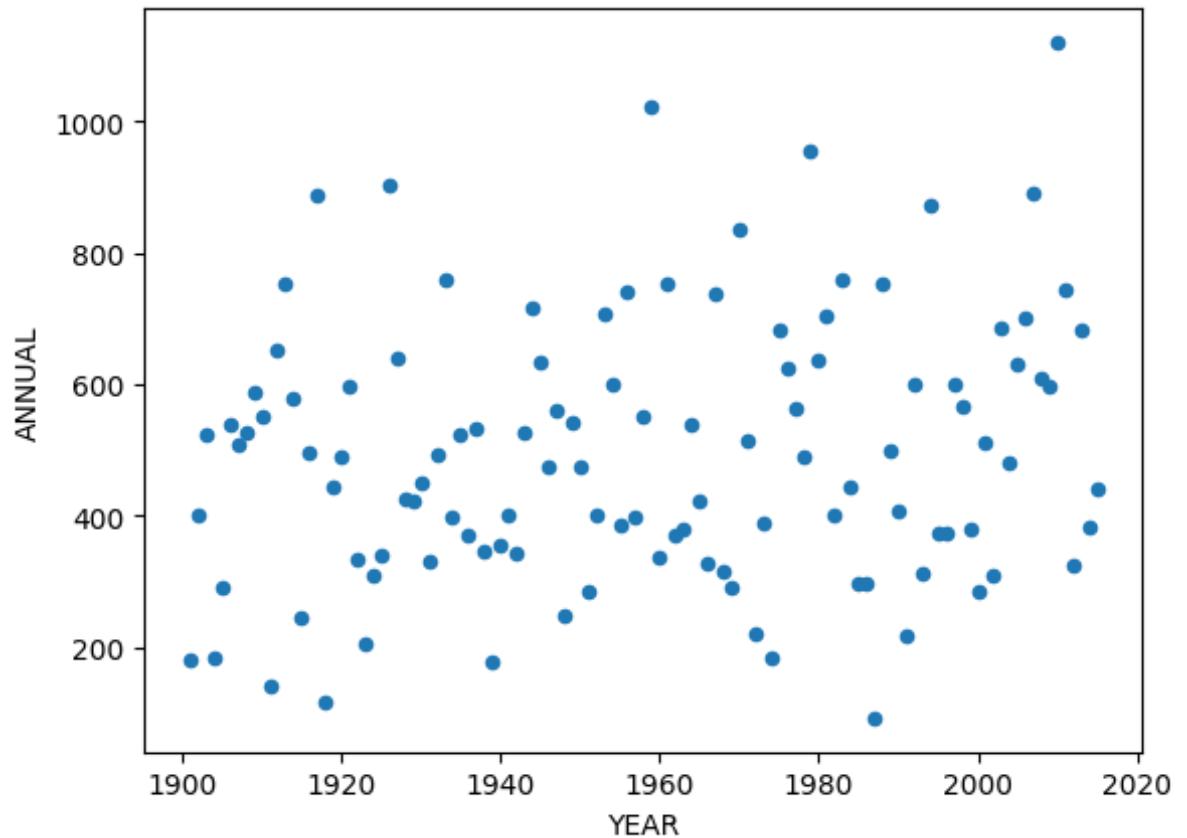
```
In [118]: plt.plot(y)
```

```
Out[118]: [<matplotlib.lines.Line2D at 0x26df716add0>,
 <matplotlib.lines.Line2D at 0x26df718fc90>,
 <matplotlib.lines.Line2D at 0x26df718fe10>,
 <matplotlib.lines.Line2D at 0x26df719c2d0>,
 <matplotlib.lines.Line2D at 0x26df719c610>,
 <matplotlib.lines.Line2D at 0x26df719ca90>,
 <matplotlib.lines.Line2D at 0x26df719ced0>,
 <matplotlib.lines.Line2D at 0x26df719d2d0>,
 <matplotlib.lines.Line2D at 0x26df719c590>,
 <matplotlib.lines.Line2D at 0x26df719cad0>,
 <matplotlib.lines.Line2D at 0x26df719dc0d0>,
 <matplotlib.lines.Line2D at 0x26df719e0d0>]
```



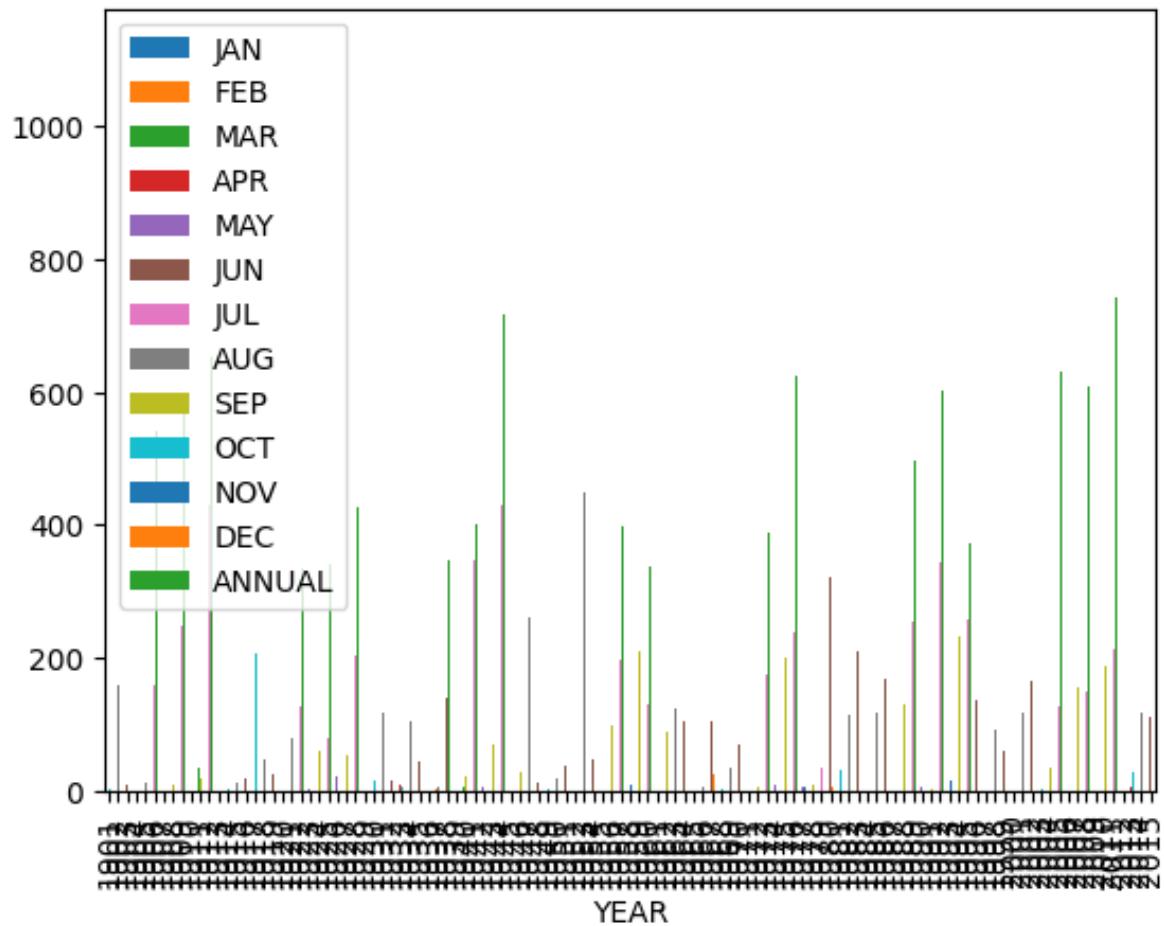
```
In [119]: x.plot.scatter(x="YEAR", y="ANNUAL")
```

```
Out[119]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



In [120]: `x.plot.bar(x="YEAR")`

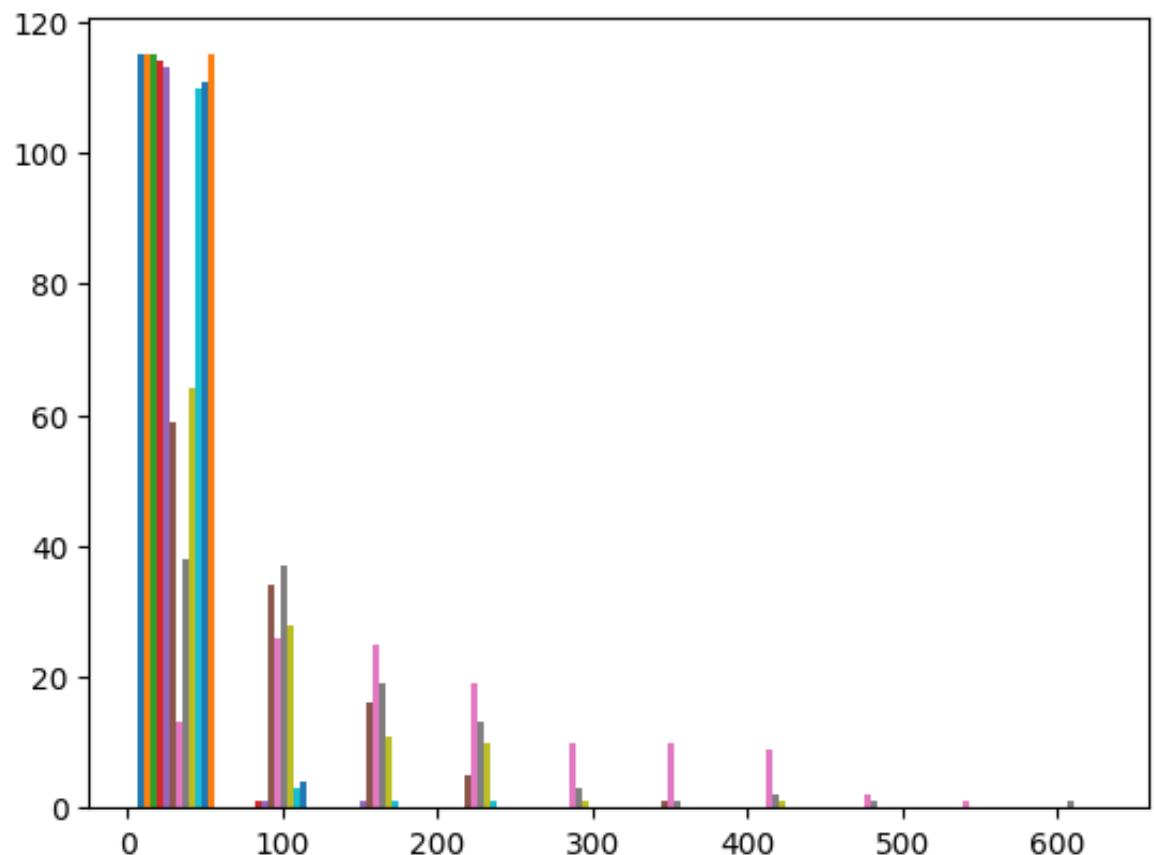
Out[120]: <Axes: xlabel='YEAR'>



In [121]: `plt.hist(y)`

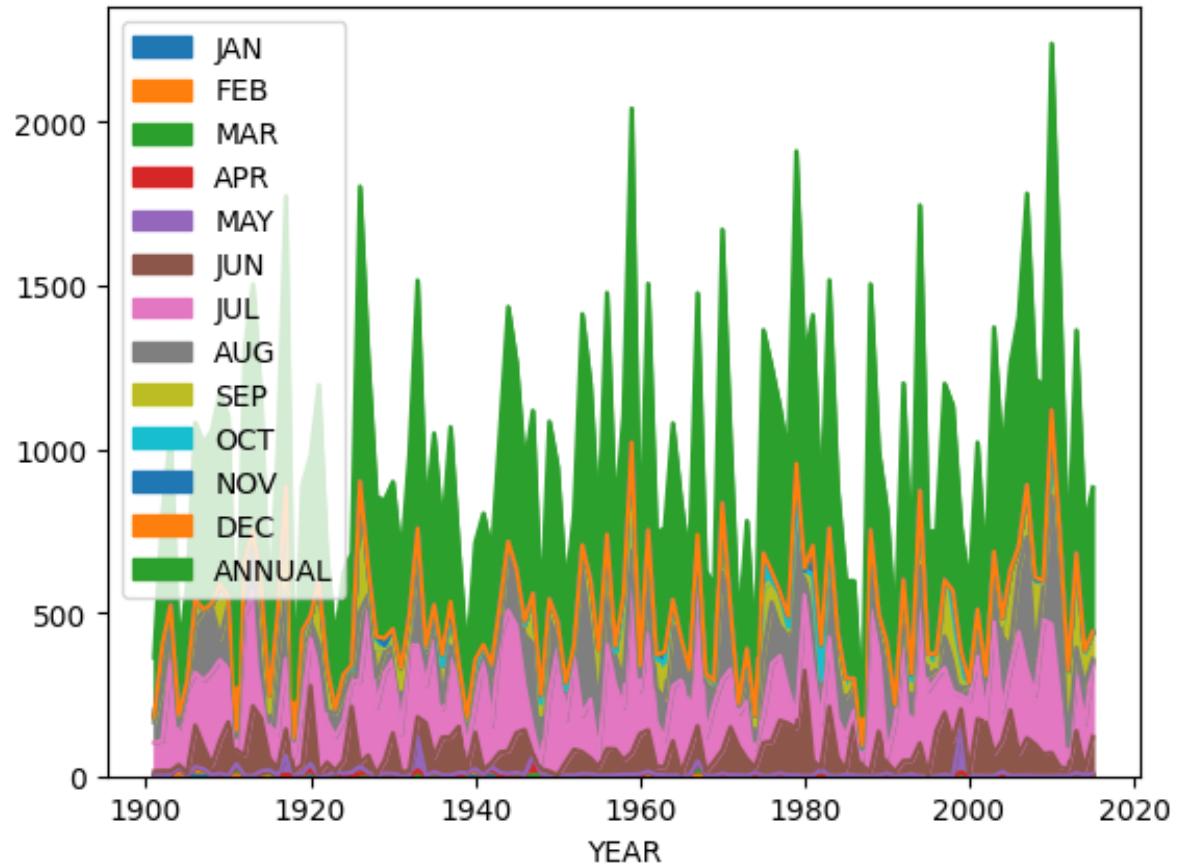
Out[121]: `(array([[115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[114., 1., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[113., 1., 1., 0., 0., 0., 0., 0., 0., 0.,
0.],
[59., 34., 16., 5., 0., 1., 0., 0., 0., 0.,
0.],
[13., 26., 25., 19., 10., 10., 9., 2., 1.,
0.],
[38., 37., 19., 13., 3., 1., 2., 1., 0.,
0.],
[64., 28., 11., 10., 1., 0., 1., 0., 0.,
0.],
[110., 3., 1., 1., 0., 0., 0., 0., 0.,
0.],
0.],`

```
[111.,   4.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,
0.], [115.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,
0.]), array([ 0. ,  63.4, 126.8, 190.2, 253.6, 317. , 380.4, 443.8, 50
7.2,
      570.6, 634. ]),  
<a list of 12 BarContainer objects>)
```



```
In [122]: x.plot.area(x="YEAR")
```

```
Out[122]: <Axes: xlabel='YEAR'>
```



GUJARAT REGION

In [123]: `x=df[df["SUBDIVISION"]=="GUJARAT REGION"]
x`

Out[123]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
2277	2277	GUJARAT REGION	1901	4.2	0.0	0.6	1.6	7.0	60.3	240.2	205.4	18.1
2278	2278	GUJARAT REGION	1902	3.9	0.0	0.0	0.6	1.0	32.8	229.8	299.0	281.2
2279	2279	GUJARAT REGION	1903	0.3	0.1	1.4	0.0	12.3	30.1	452.9	202.0	183.2
2280	2280	GUJARAT REGION	1904	0.8	10.6	16.8	0.2	3.9	48.3	194.8	71.8	138.0
2281	2281	GUJARAT REGION	1905	0.1	0.7	1.1	0.3	0.0	20.1	668.3	37.9	81.3
...
2387	2387	GUJARAT REGION	2011	0.0	0.2	0.0	0.0	0.0	16.3	259.2	451.7	162.5
2388	2388	GUJARAT REGION	2012	0.1	0.0	0.0	0.0	0.0	34.4	178.2	230.3	263.8
2389	2389	GUJARAT REGION	2013	0.0	0.9	0.1	4.6	0.0	155.7	405.4	211.1	287.3
2390	2390	GUJARAT REGION	2014	5.7	0.1	0.2	1.0	1.3	11.6	307.5	138.6	235.1
2391	2391	GUJARAT REGION	2015	1.8	0.0	6.1	5.5	0.9	120.7	354.7	37.4	93.4

115 rows × 20 columns

In [124]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out[124]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
2277	1901	4.2	0.0	0.6	1.6	7.0	60.3	240.2	205.4	18.1	16.6	0.0	0.3	405.4
2278	1902	3.9	0.0	0.0	0.6	1.0	32.8	229.8	299.0	281.2	2.3	1.5	11.9	405.4
2279	1903	0.3	0.1	1.4	0.0	12.3	30.1	452.9	202.0	183.2	5.4	0.0	0.0	405.4
2280	1904	0.8	10.6	16.8	0.2	3.9	48.3	194.8	71.8	138.0	6.1	0.1	1.2	405.4
2281	1905	0.1	0.7	1.1	0.3	0.0	20.1	668.3	37.9	81.3	1.4	0.2	0.1	405.4
...
2387	2011	0.0	0.2	0.0	0.0	0.0	16.3	259.2	451.7	162.5	0.4	0.0	0.0	405.4
2388	2012	0.1	0.0	0.0	0.0	0.0	34.4	178.2	230.3	263.8	7.1	0.0	0.0	405.4
2389	2013	0.0	0.9	0.1	4.6	0.0	155.7	405.4	211.1	287.3	53.2	0.1	0.0	405.4
2390	2014	5.7	0.1	0.2	1.0	1.3	11.6	307.5	138.6	235.1	3.3	1.3	0.0	405.4
2391	2015	1.8	0.0	6.1	5.5	0.9	120.7	354.7	37.4	93.4	2.2	0.3	0.0	405.4

115 rows × 14 columns

In [125]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

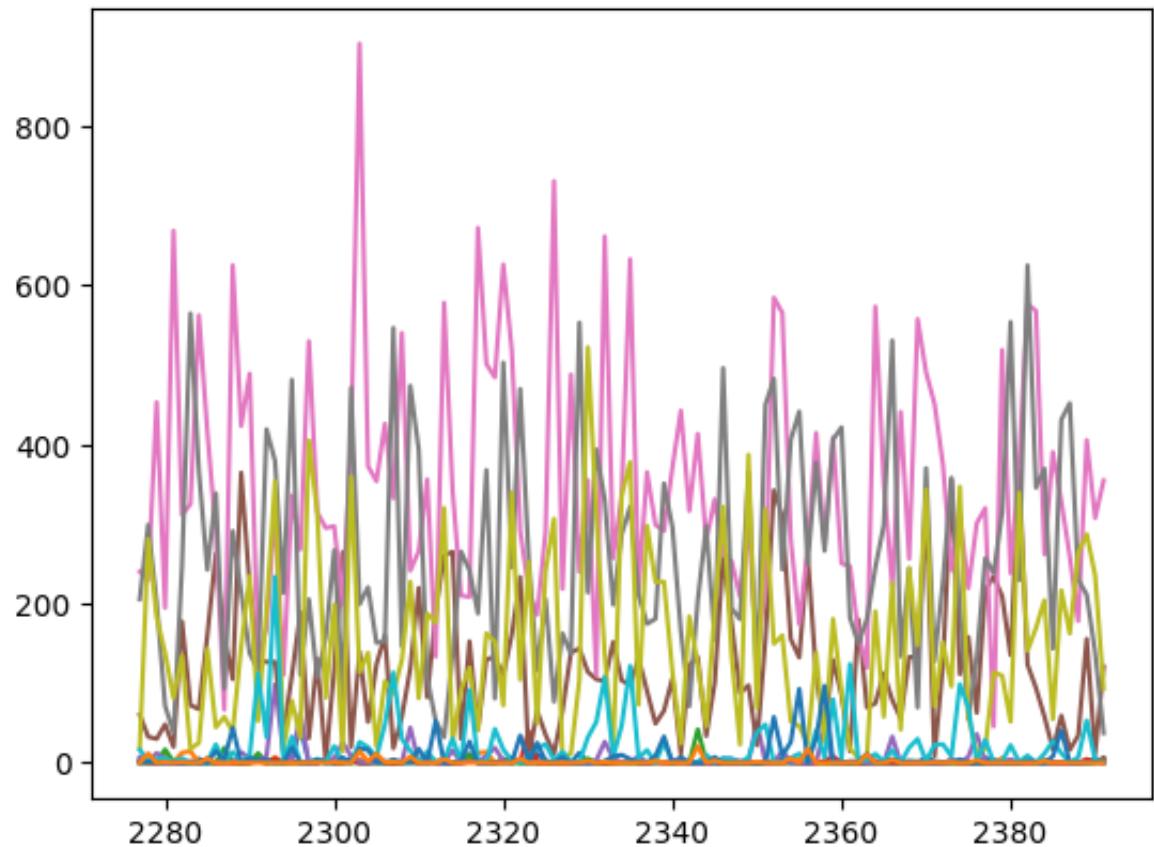
Out[125]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
2277	4.2	0.0	0.6	1.6	7.0	60.3	240.2	205.4	18.1	16.6	0.0	0.3	405.4
2278	3.9	0.0	0.0	0.6	1.0	32.8	229.8	299.0	281.2	2.3	1.5	11.9	405.4
2279	0.3	0.1	1.4	0.0	12.3	30.1	452.9	202.0	183.2	5.4	0.0	0.0	405.4
2280	0.8	10.6	16.8	0.2	3.9	48.3	194.8	71.8	138.0	6.1	0.1	1.2	405.4
2281	0.1	0.7	1.1	0.3	0.0	20.1	668.3	37.9	81.3	1.4	0.2	0.1	405.4
...
2387	0.0	0.2	0.0	0.0	0.0	16.3	259.2	451.7	162.5	0.4	0.0	0.0	405.4
2388	0.1	0.0	0.0	0.0	0.0	34.4	178.2	230.3	263.8	7.1	0.0	0.0	405.4
2389	0.0	0.9	0.1	4.6	0.0	155.7	405.4	211.1	287.3	53.2	0.1	0.0	405.4
2390	5.7	0.1	0.2	1.0	1.3	11.6	307.5	138.6	235.1	3.3	1.3	0.0	405.4
2391	1.8	0.0	6.1	5.5	0.9	120.7	354.7	37.4	93.4	2.2	0.3	0.0	405.4

115 rows × 12 columns

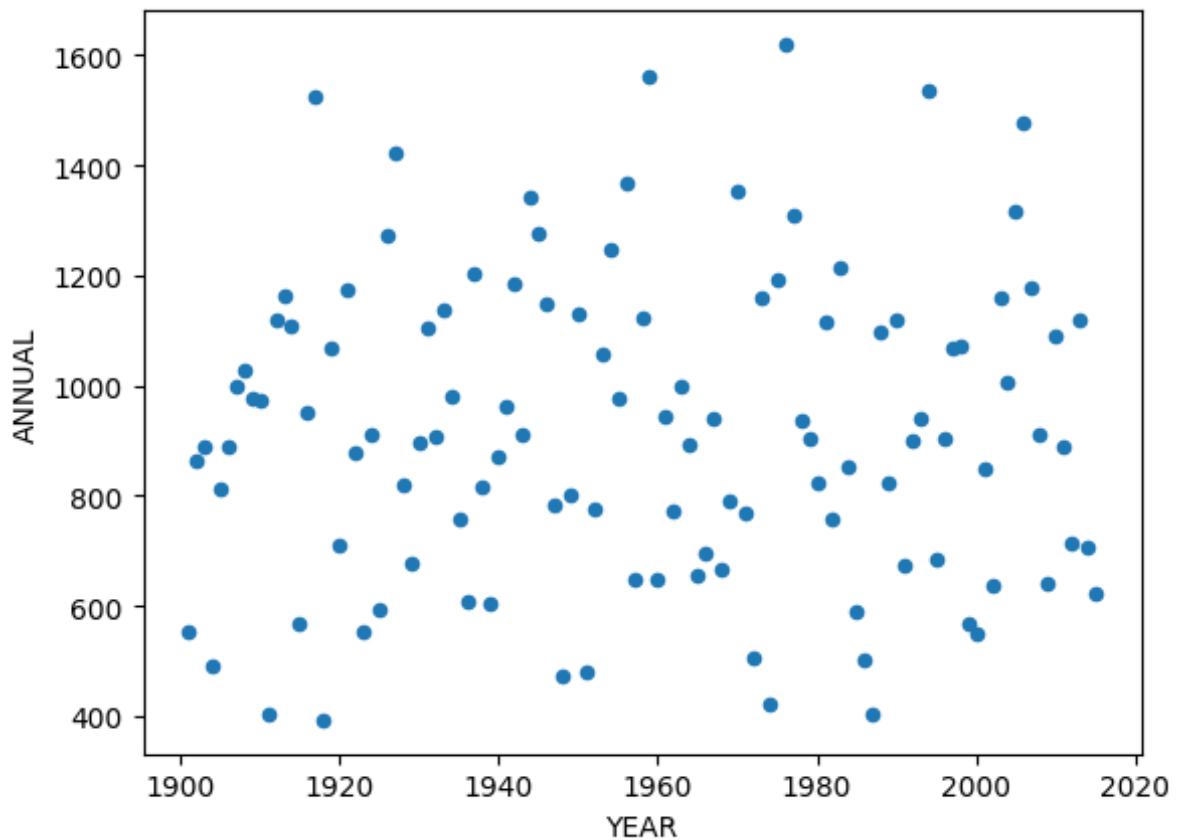
```
In [126]: plt.plot(y)
```

```
Out[126]: [<matplotlib.lines.Line2D at 0x26df93f2dd0>,
 <matplotlib.lines.Line2D at 0x26df91a5490>,
 <matplotlib.lines.Line2D at 0x26df91a5850>,
 <matplotlib.lines.Line2D at 0x26df91a5c50>,
 <matplotlib.lines.Line2D at 0x26df91a5f50>,
 <matplotlib.lines.Line2D at 0x26df91a6310>,
 <matplotlib.lines.Line2D at 0x26df91a6910>,
 <matplotlib.lines.Line2D at 0x26df91a6d50>,
 <matplotlib.lines.Line2D at 0x26df91a6050>,
 <matplotlib.lines.Line2D at 0x26df91a6490>,
 <matplotlib.lines.Line2D at 0x26df91a7710>,
 <matplotlib.lines.Line2D at 0x26df91a7ad0>]
```



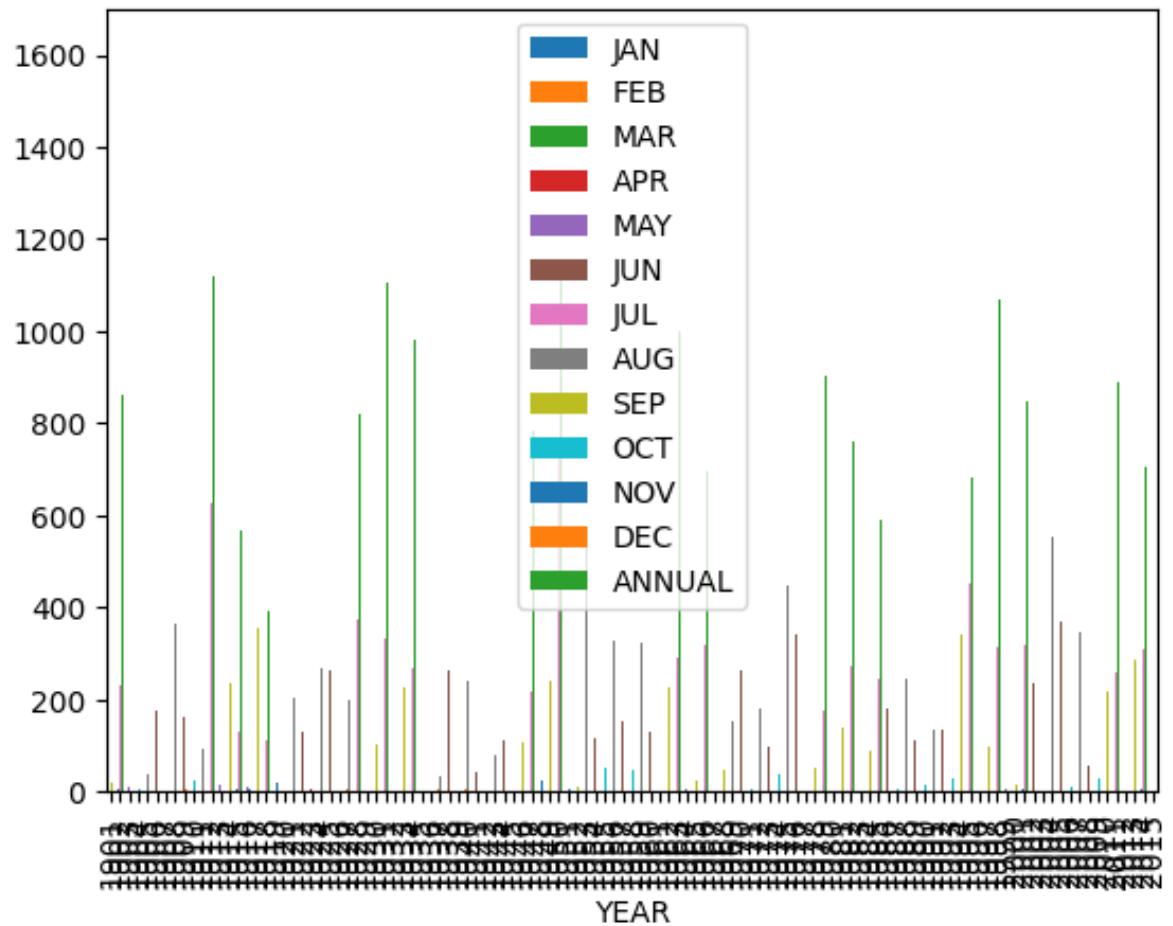
```
In [127]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

```
Out[127]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



In [128]: `x.plot.bar(x="YEAR")`

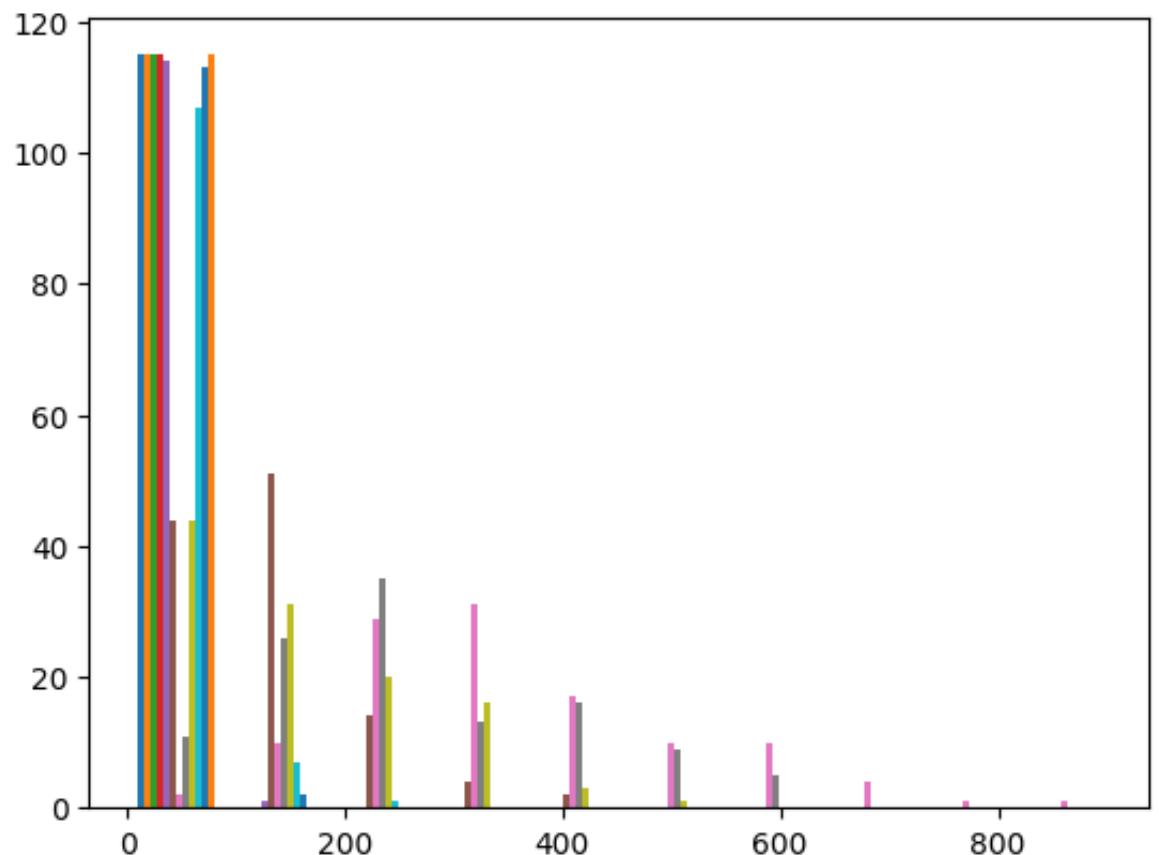
Out[128]: <Axes: xlabel='YEAR'>



In [129]: `plt.hist(y)`

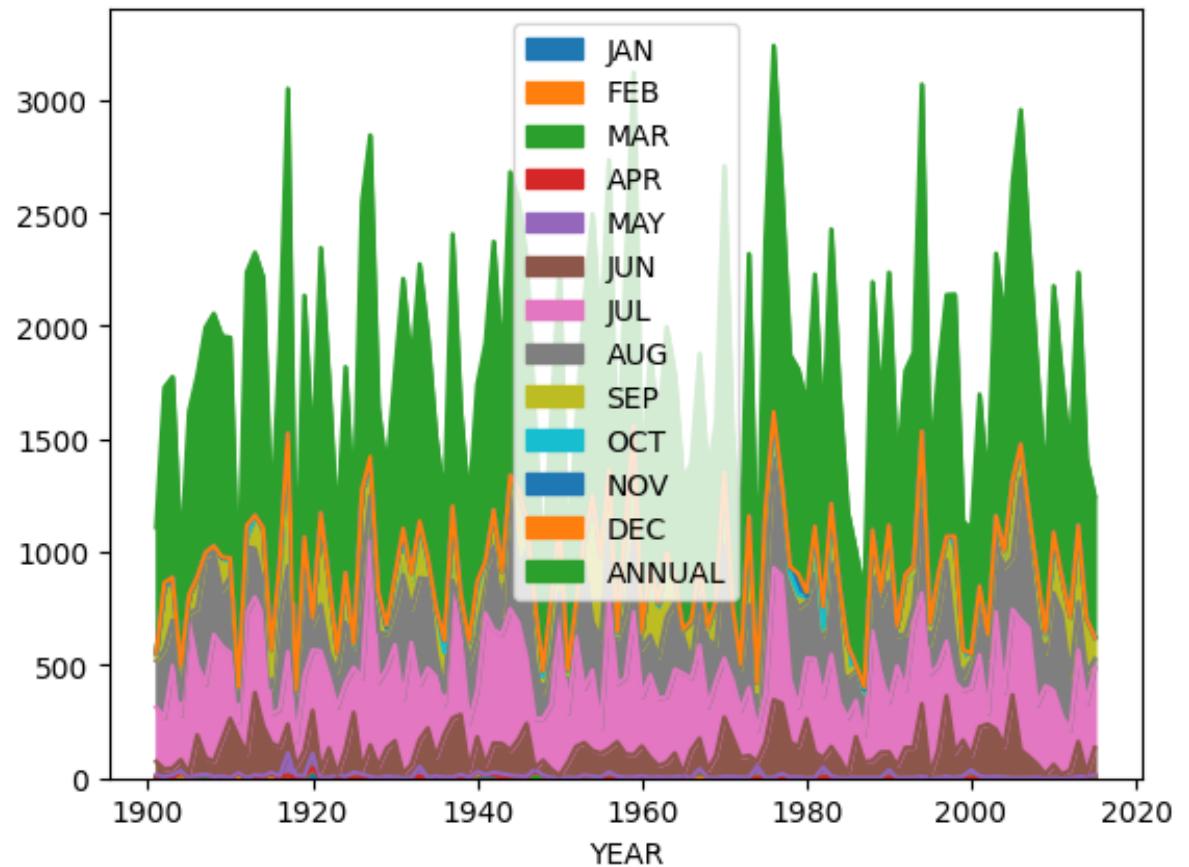
Out[129]: `(array([[115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
 0.],
 [115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
 0.],
 [115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
 0.],
 [115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
 0.],
 [115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
 0.],
 [114., 1., 0., 0., 0., 0., 0., 0., 0., 0.,
 0.],
 [44., 51., 14., 4., 2., 0., 0., 0., 0., 0.,
 0.],
 [2., 10., 29., 31., 17., 10., 10., 4., 1.,
 1.],
 [11., 26., 35., 13., 16., 9., 5., 0., 0.,
 0.],
 [44., 31., 20., 16., 3., 1., 0., 0., 0.,
 0.],
 [107., 7., 1., 0., 0., 0., 0., 0., 0.,
 0.],
 0.],`

```
[113.,  2.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,
0.], [115.,  0.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,
0.]), array([ 0. ,  90.33, 180.66, 270.99, 361.32, 451.65, 541.98, 63
2.31,
722.64, 812.97, 903.3 ]),  
<a list of 12 BarContainer objects>)
```



In [130]: `x.plot.area(x="YEAR")`

Out[130]: <Axes: xlabel='YEAR'>



EAST MADHYA PRADESH

In [131]: `x=df[df["SUBDIVISION"]=="EAST MADHYA PRADESH"]
x`

Out[131]:

		index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
		2162	2162	EAST MADHYA PRADESH	1901	48.5	38.1	15.7	10.7	6.2	61.0	367.5	589.2	189.9
		2163	2163	EAST MADHYA PRADESH	1902	14.9	8.9	0.0	3.6	2.7	28.0	411.9	227.0	236.6
		2164	2164	EAST MADHYA PRADESH	1903	5.6	2.9	0.3	0.9	37.5	67.5	261.4	366.7	257.4
		2165	2165	EAST MADHYA PRADESH	1904	2.0	15.3	48.2	0.0	8.6	109.9	443.2	316.6	135.6
		2166	2166	EAST MADHYA PRADESH	1905	15.9	8.0	14.3	12.3	10.2	34.4	292.4	243.3	250.9
		
		2272	2272	EAST MADHYA PRADESH	2011	0.6	1.9	0.3	7.1	4.7	332.5	323.6	326.9	276.5
		2273	2273	EAST MADHYA PRADESH	2012	39.4	0.7	0.6	1.1	1.2	67.8	398.9	351.7	172.6
		2274	2274	EAST MADHYA PRADESH	2013	2.0	43.4	14.1	9.5	0.3	311.9	456.2	480.8	78.0
		2275	2275	EAST MADHYA PRADESH	2014	32.1	49.7	17.8	5.1	2.5	91.8	283.4	231.8	139.6
		2276	2276	EAST MADHYA PRADESH	2015	37.3	11.0	73.4	25.8	6.3	139.2	262.2	272.1	71.6

115 rows × 20 columns

In [132]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out[132]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	A
2162	1901	48.5	38.1	15.7	10.7	6.2	61.0	367.5	589.2	189.9	5.9	0.0	0.0	
2163	1902	14.9	8.9	0.0	3.6	2.7	28.0	411.9	227.0	236.6	17.0	27.6	6.1	
2164	1903	5.6	2.9	0.3	0.9	37.5	67.5	261.4	366.7	257.4	177.9	0.0	0.0	
2165	1904	2.0	15.3	48.2	0.0	8.6	109.9	443.2	316.6	135.6	44.8	3.2	16.9	
2166	1905	15.9	8.0	14.3	12.3	10.2	34.4	292.4	243.3	250.9	2.9	0.0	1.6	
...	
2272	2011	0.6	1.9	0.3	7.1	4.7	332.5	323.6	326.9	276.5	1.1	0.0	0.0	
2273	2012	39.4	0.7	0.6	1.1	1.2	67.8	398.9	351.7	172.6	12.7	3.8	2.7	
2274	2013	2.0	43.4	14.1	9.5	0.3	311.9	456.2	480.8	78.0	124.2	0.5	1.0	
2275	2014	32.1	49.7	17.8	5.1	2.5	91.8	283.4	231.8	139.6	56.4	1.9	12.9	
2276	2015	37.3	11.0	73.4	25.8	6.3	139.2	262.2	272.1	71.6	38.2	1.2	0.9	

115 rows × 14 columns

In [133]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

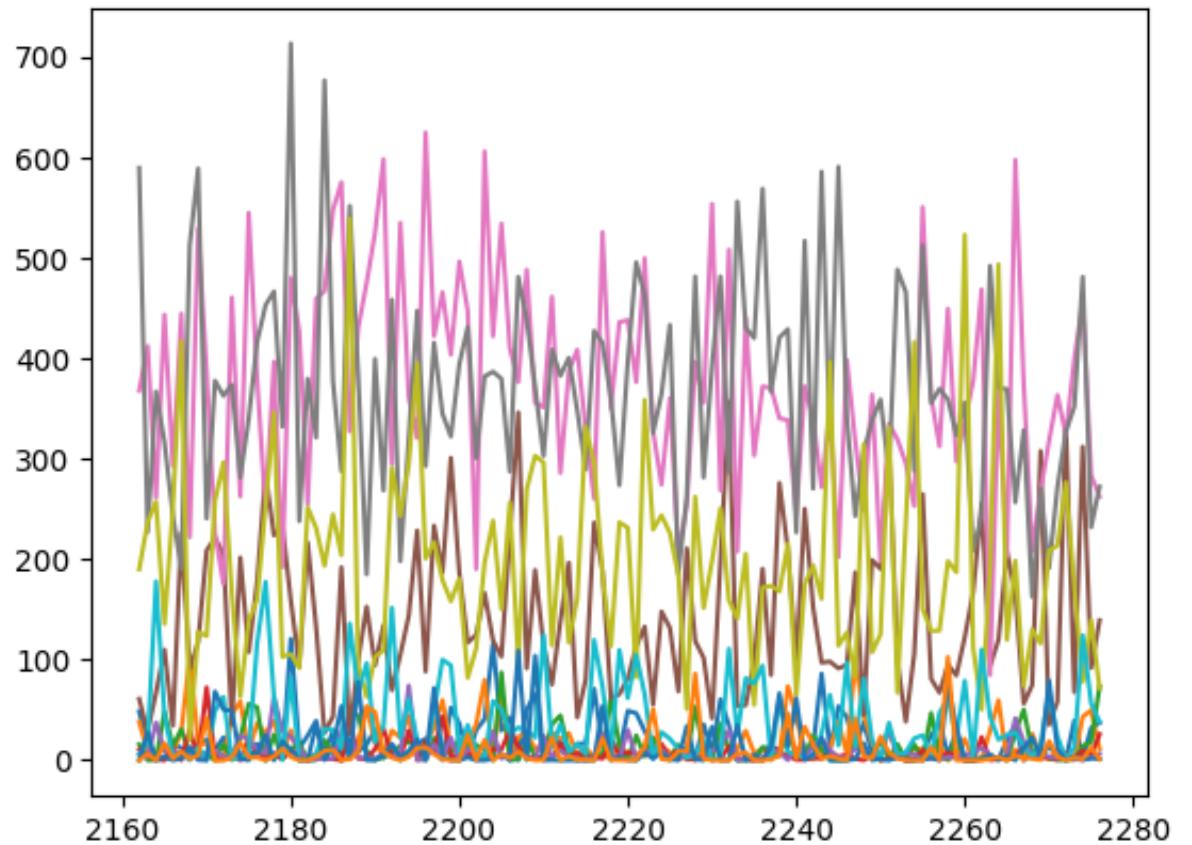
Out[133]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
2162	48.5	38.1	15.7	10.7	6.2	61.0	367.5	589.2	189.9	5.9	0.0	0.0	
2163	14.9	8.9	0.0	3.6	2.7	28.0	411.9	227.0	236.6	17.0	27.6	6.1	
2164	5.6	2.9	0.3	0.9	37.5	67.5	261.4	366.7	257.4	177.9	0.0	0.0	
2165	2.0	15.3	48.2	0.0	8.6	109.9	443.2	316.6	135.6	44.8	3.2	16.9	
2166	15.9	8.0	14.3	12.3	10.2	34.4	292.4	243.3	250.9	2.9	0.0	1.6	
...	
2272	0.6	1.9	0.3	7.1	4.7	332.5	323.6	326.9	276.5	1.1	0.0	0.0	
2273	39.4	0.7	0.6	1.1	1.2	67.8	398.9	351.7	172.6	12.7	3.8	2.7	
2274	2.0	43.4	14.1	9.5	0.3	311.9	456.2	480.8	78.0	124.2	0.5	1.0	
2275	32.1	49.7	17.8	5.1	2.5	91.8	283.4	231.8	139.6	56.4	1.9	12.9	
2276	37.3	11.0	73.4	25.8	6.3	139.2	262.2	272.1	71.6	38.2	1.2	0.9	

115 rows × 12 columns

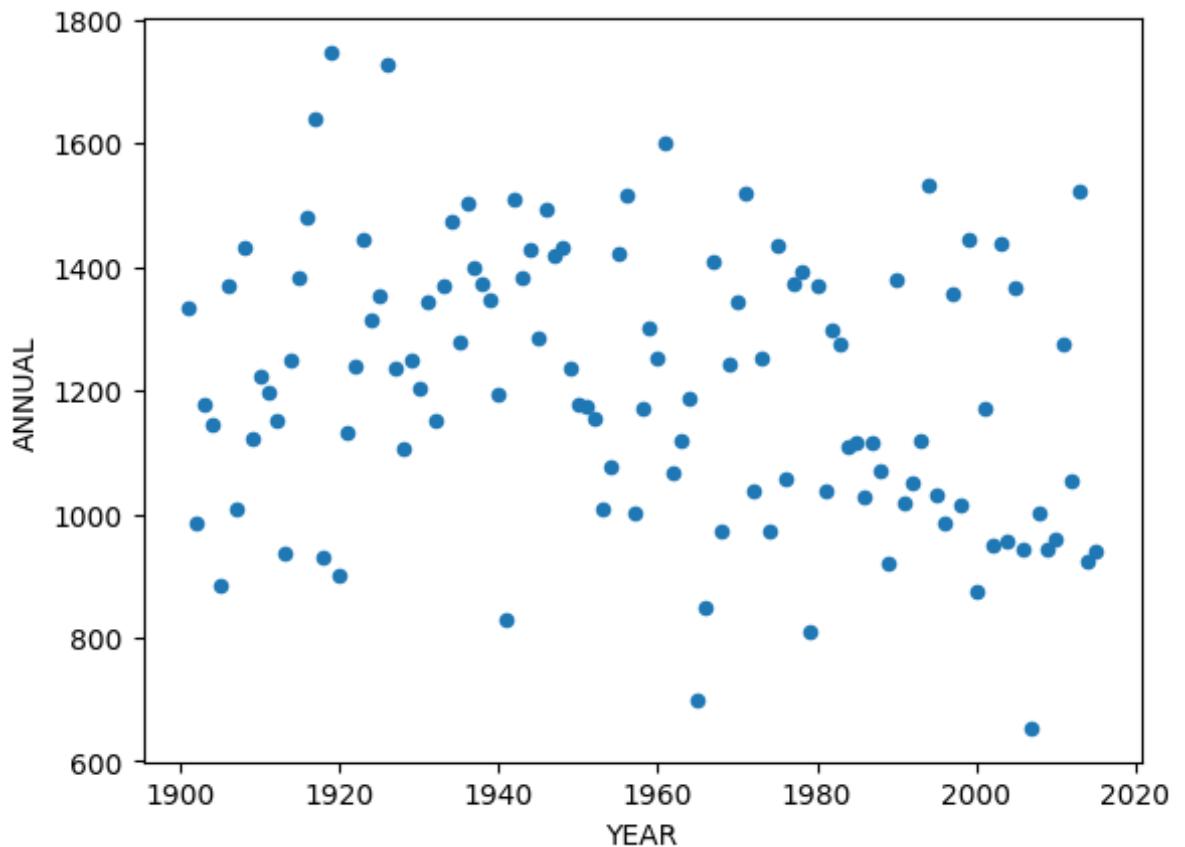
```
In [134]: plt.plot(y)
```

```
Out[134]: [<matplotlib.lines.Line2D at 0x26dfb47add0>,
 <matplotlib.lines.Line2D at 0x26dfb36e3d0>,
 <matplotlib.lines.Line2D at 0x26dfb36e6d0>,
 <matplotlib.lines.Line2D at 0x26dfb36ead0>,
 <matplotlib.lines.Line2D at 0x26dfb36ee10>,
 <matplotlib.lines.Line2D at 0x26dfb36f210>,
 <matplotlib.lines.Line2D at 0x26dfb36f650>,
 <matplotlib.lines.Line2D at 0x26dfb36fa10>,
 <matplotlib.lines.Line2D at 0x26dfb36ef10>,
 <matplotlib.lines.Line2D at 0x26dfb37c390>,
 <matplotlib.lines.Line2D at 0x26dfb37c5d0>,
 <matplotlib.lines.Line2D at 0x26dfb37c990>]
```



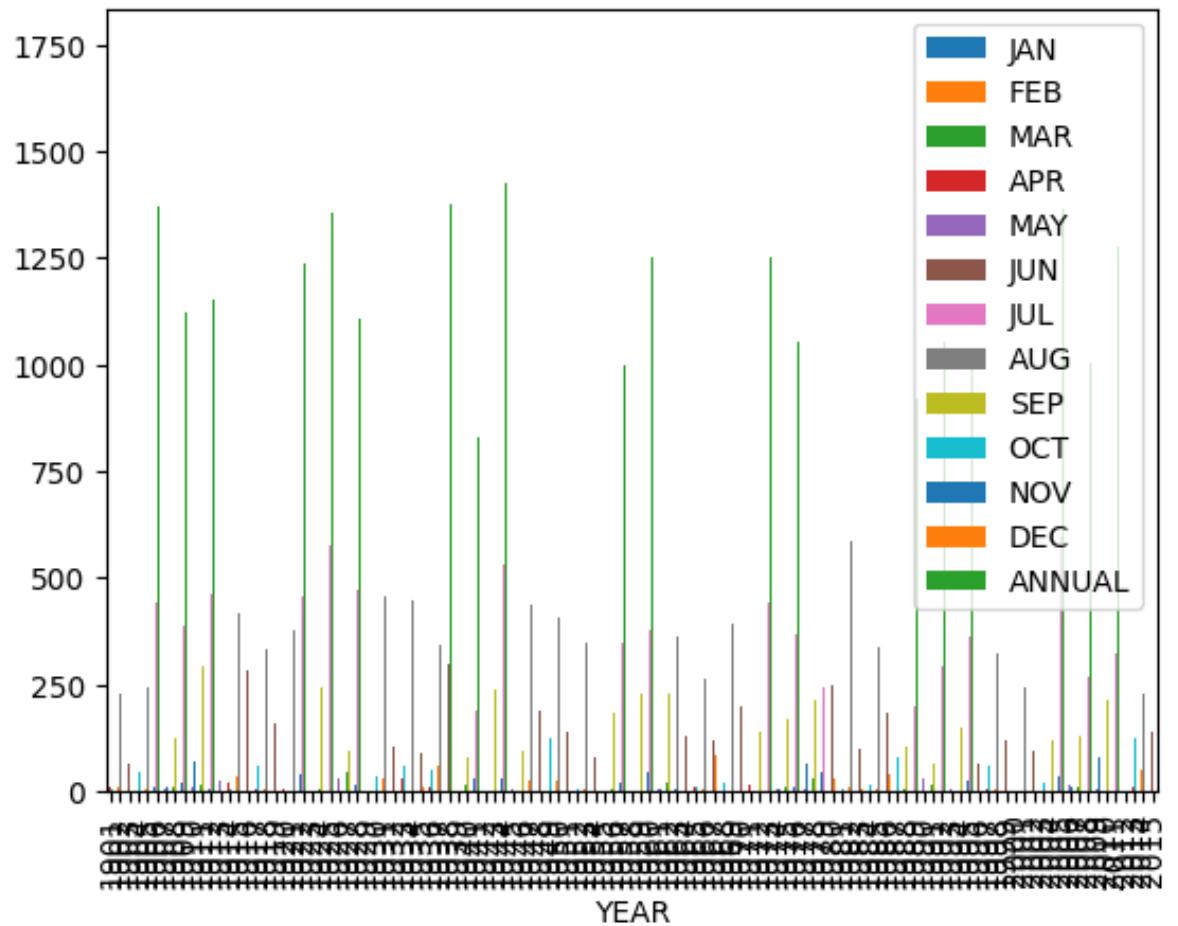
```
In [135]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

```
Out[135]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



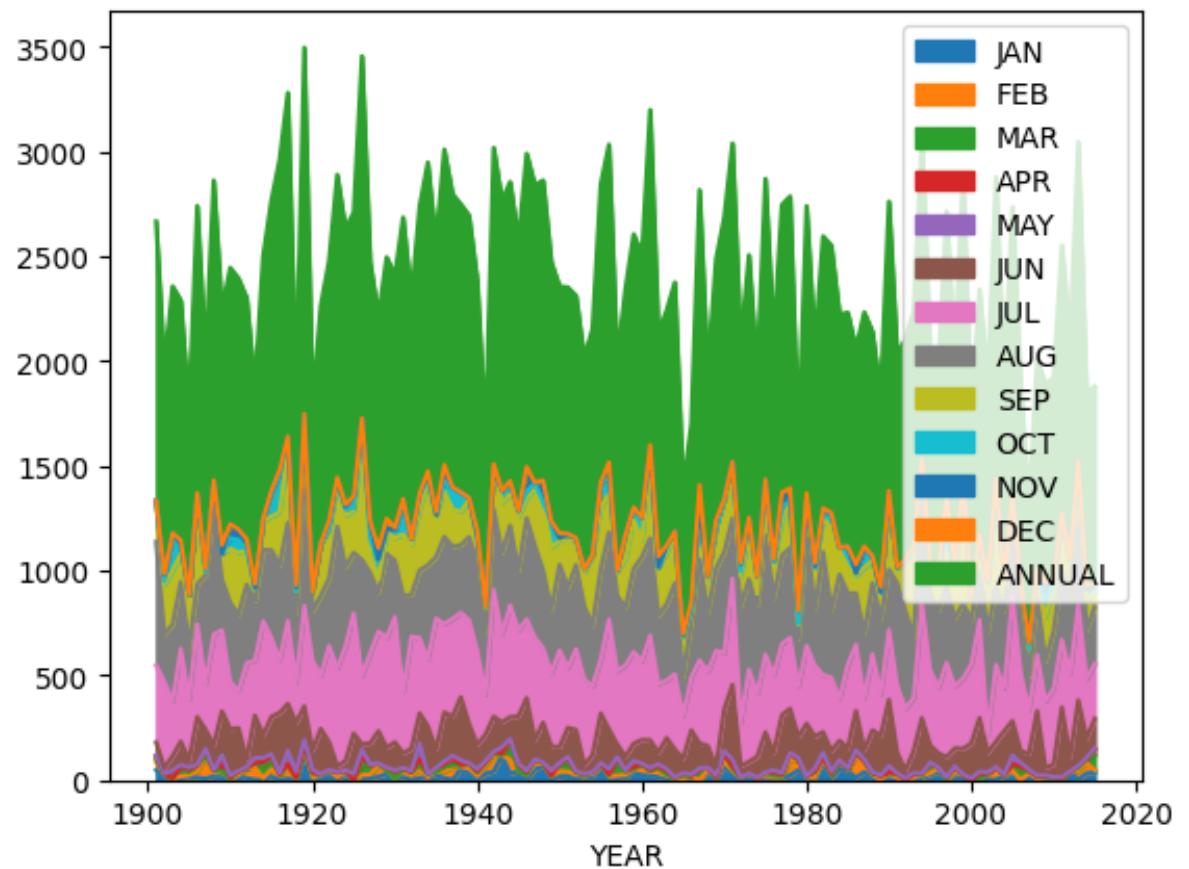
In [136]: `x.plot.bar(x="YEAR")`

Out[136]: <Axes: xlabel='YEAR'>



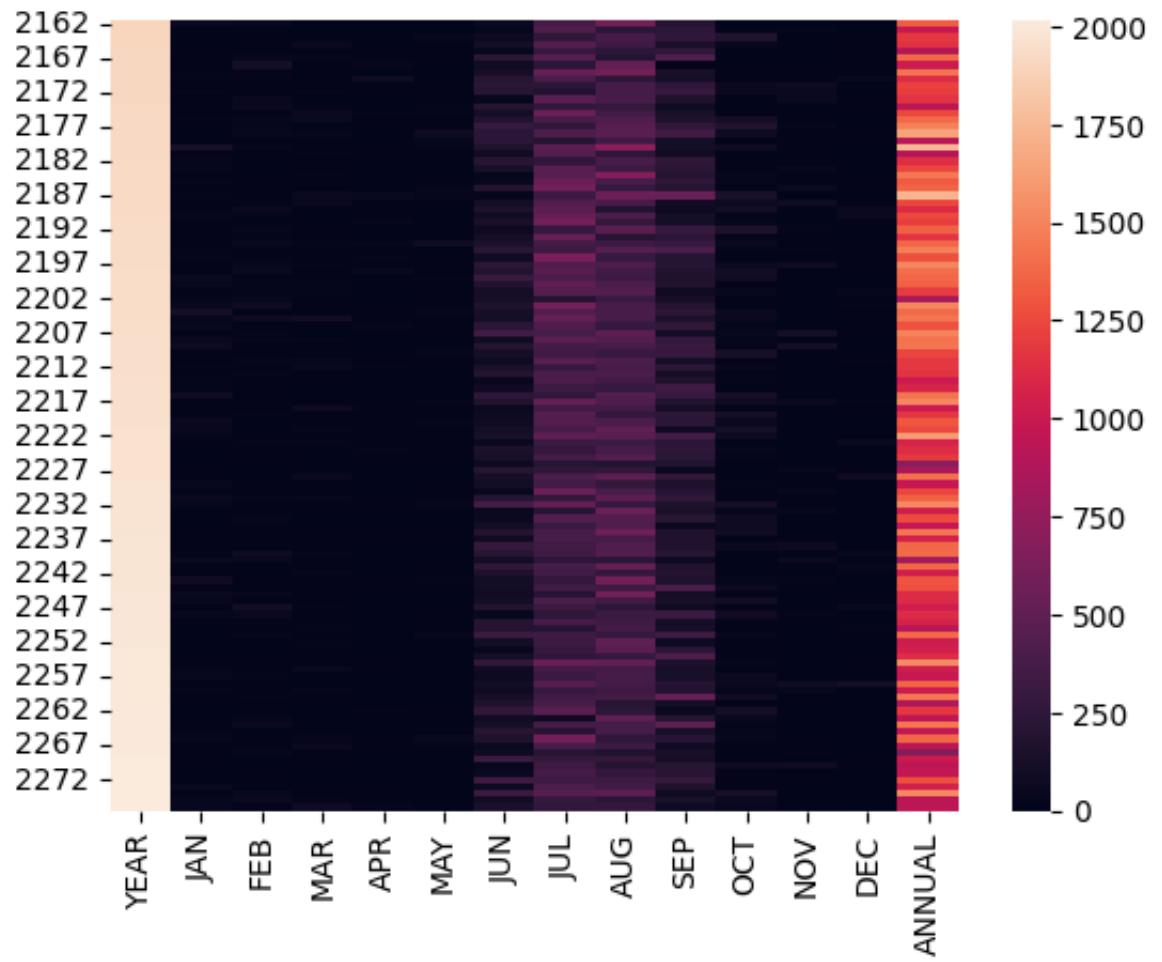
```
In [137]: x.plot.area(x="YEAR")
```

```
Out[137]: <Axes: xlabel='YEAR'>
```



In [138]: `sns.heatmap(x)`

Out[138]: <Axes: >



KERALA

In [139]: `x=df[df["SUBDIVISION"]=="KERALA"]`

`x`

Out[139]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DI
3887	3887	KERALA	1901	28.7	44.7	51.6	160.0	174.7	824.6	743.0	357.5	197.7	266.9	350.8	48
3888	3888	KERALA	1902	6.7	2.6	57.3	83.9	134.5	390.9	1205.0	315.8	491.6	358.4	158.3	121
3889	3889	KERALA	1903	3.2	18.6	3.1	83.6	249.7	558.6	1022.5	420.2	341.8	354.1	157.0	59
3890	3890	KERALA	1904	23.7	3.0	32.2	71.5	235.7	1098.2	725.5	351.8	222.7	328.1	33.9	3
3891	3891	KERALA	1905	1.2	22.3	9.4	105.9	263.3	850.2	520.5	293.6	217.2	383.5	74.4	0
...
3997	3997	KERALA	2011	20.5	45.7	24.1	165.2	124.2	788.5	536.8	492.7	391.2	227.2	169.7	49
3998	3998	KERALA	2012	7.4	11.0	21.0	171.1	95.3	430.3	362.6	501.6	241.1	187.5	112.9	9
3999	3999	KERALA	2013	3.9	40.1	49.9	49.3	119.3	1042.7	830.2	369.7	318.6	259.9	154.9	17
4000	4000	KERALA	2014	4.6	10.3	17.9	95.7	251.0	454.4	677.8	733.9	298.8	355.5	99.5	47
4001	4001	KERALA	2015	3.1	5.8	50.1	214.1	201.8	563.6	406.0	252.2	292.9	308.1	223.6	79

115 rows × 20 columns

In [140]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–Dec"])`

Out[140]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DI
3887	1901	28.7	44.7	51.6	160.0	174.7	824.6	743.0	357.5	197.7	266.9	350.8	48
3888	1902	6.7	2.6	57.3	83.9	134.5	390.9	1205.0	315.8	491.6	358.4	158.3	121
3889	1903	3.2	18.6	3.1	83.6	249.7	558.6	1022.5	420.2	341.8	354.1	157.0	59
3890	1904	23.7	3.0	32.2	71.5	235.7	1098.2	725.5	351.8	222.7	328.1	33.9	3
3891	1905	1.2	22.3	9.4	105.9	263.3	850.2	520.5	293.6	217.2	383.5	74.4	0
...
3997	2011	20.5	45.7	24.1	165.2	124.2	788.5	536.8	492.7	391.2	227.2	169.7	49
3998	2012	7.4	11.0	21.0	171.1	95.3	430.3	362.6	501.6	241.1	187.5	112.9	9
3999	2013	3.9	40.1	49.9	49.3	119.3	1042.7	830.2	369.7	318.6	259.9	154.9	17
4000	2014	4.6	10.3	17.9	95.7	251.0	454.4	677.8	733.9	298.8	355.5	99.5	47
4001	2015	3.1	5.8	50.1	214.1	201.8	563.6	406.0	252.2	292.9	308.1	223.6	79

115 rows × 14 columns

In [141]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
`y`

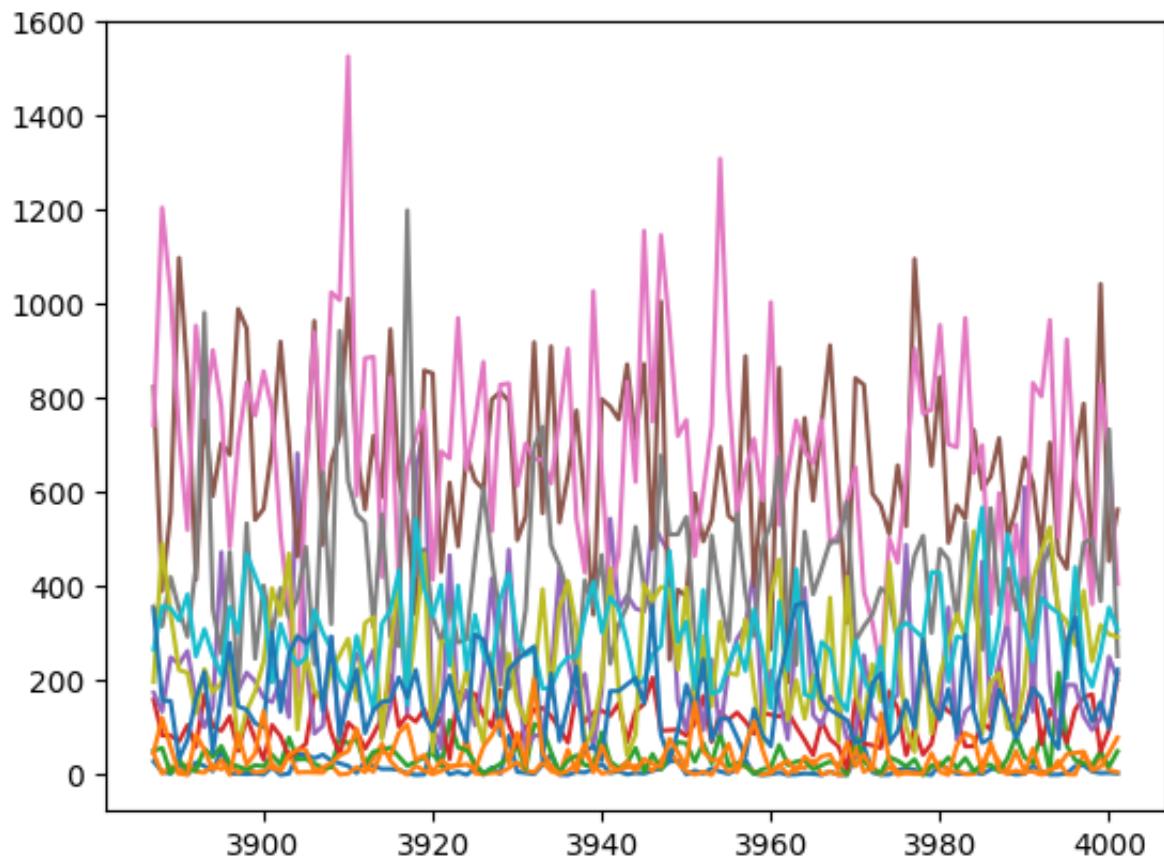
Out[141]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
3887	28.7	44.7	51.6	160.0	174.7	824.6	743.0	357.5	197.7	266.9	350.8	48.4
3888	6.7	2.6	57.3	83.9	134.5	390.9	1205.0	315.8	491.6	358.4	158.3	121.5
3889	3.2	18.6	3.1	83.6	249.7	558.6	1022.5	420.2	341.8	354.1	157.0	59.0
3890	23.7	3.0	32.2	71.5	235.7	1098.2	725.5	351.8	222.7	328.1	33.9	3.3
3891	1.2	22.3	9.4	105.9	263.3	850.2	520.5	293.6	217.2	383.5	74.4	0.2
...
3997	20.5	45.7	24.1	165.2	124.2	788.5	536.8	492.7	391.2	227.2	169.7	49.5
3998	7.4	11.0	21.0	171.1	95.3	430.3	362.6	501.6	241.1	187.5	112.9	9.4
3999	3.9	40.1	49.9	49.3	119.3	1042.7	830.2	369.7	318.6	259.9	154.9	17.0
4000	4.6	10.3	17.9	95.7	251.0	454.4	677.8	733.9	298.8	355.5	99.5	47.2
4001	3.1	5.8	50.1	214.1	201.8	563.6	406.0	252.2	292.9	308.1	223.6	79.4

115 rows × 12 columns

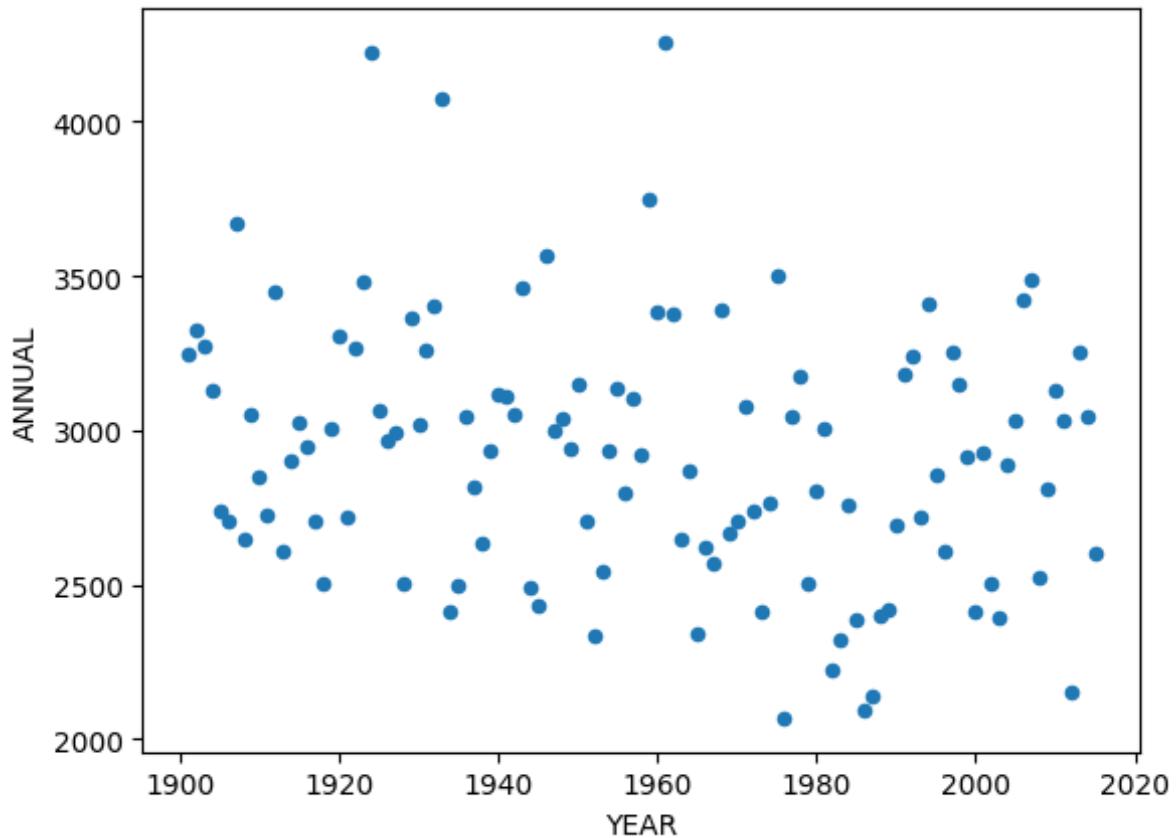
```
In [142]: plt.plot(y)
```

```
Out[142]: [<matplotlib.lines.Line2D at 0x26dfd540d90>,
 <matplotlib.lines.Line2D at 0x26dfc322890>,
 <matplotlib.lines.Line2D at 0x26dfd5a3810>,
 <matplotlib.lines.Line2D at 0x26dfc32c2d0>,
 <matplotlib.lines.Line2D at 0x26dfc32c750>,
 <matplotlib.lines.Line2D at 0x26dfc32cb10>,
 <matplotlib.lines.Line2D at 0x26dfc32d090>,
 <matplotlib.lines.Line2D at 0x26dfc32d350>,
 <matplotlib.lines.Line2D at 0x26dfc32c6d0>,
 <matplotlib.lines.Line2D at 0x26dfc32cc90>,
 <matplotlib.lines.Line2D at 0x26dfc2f5810>,
 <matplotlib.lines.Line2D at 0x26dfc2f6b90>]
```



```
In [143]: x.plot.scatter(x="YEAR", y="ANNUAL")
```

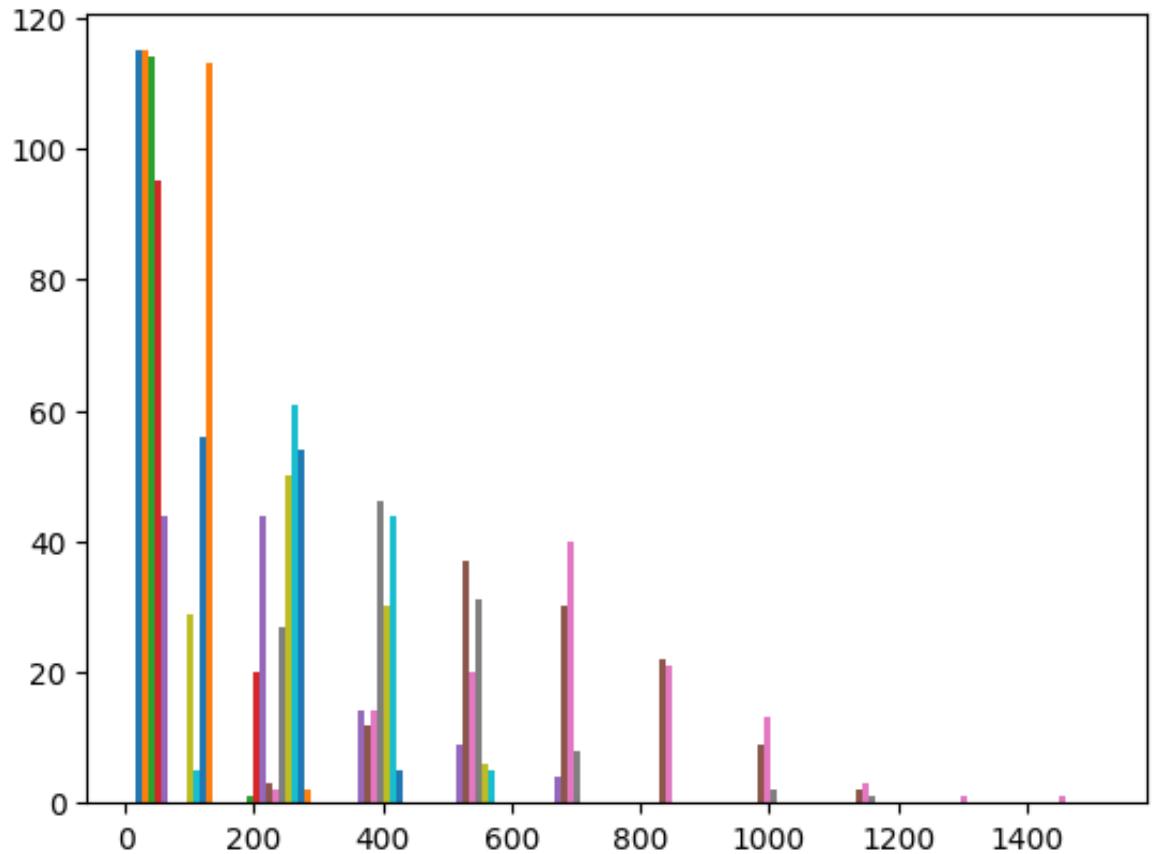
```
Out[143]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [144]: plt.hist(y)
```

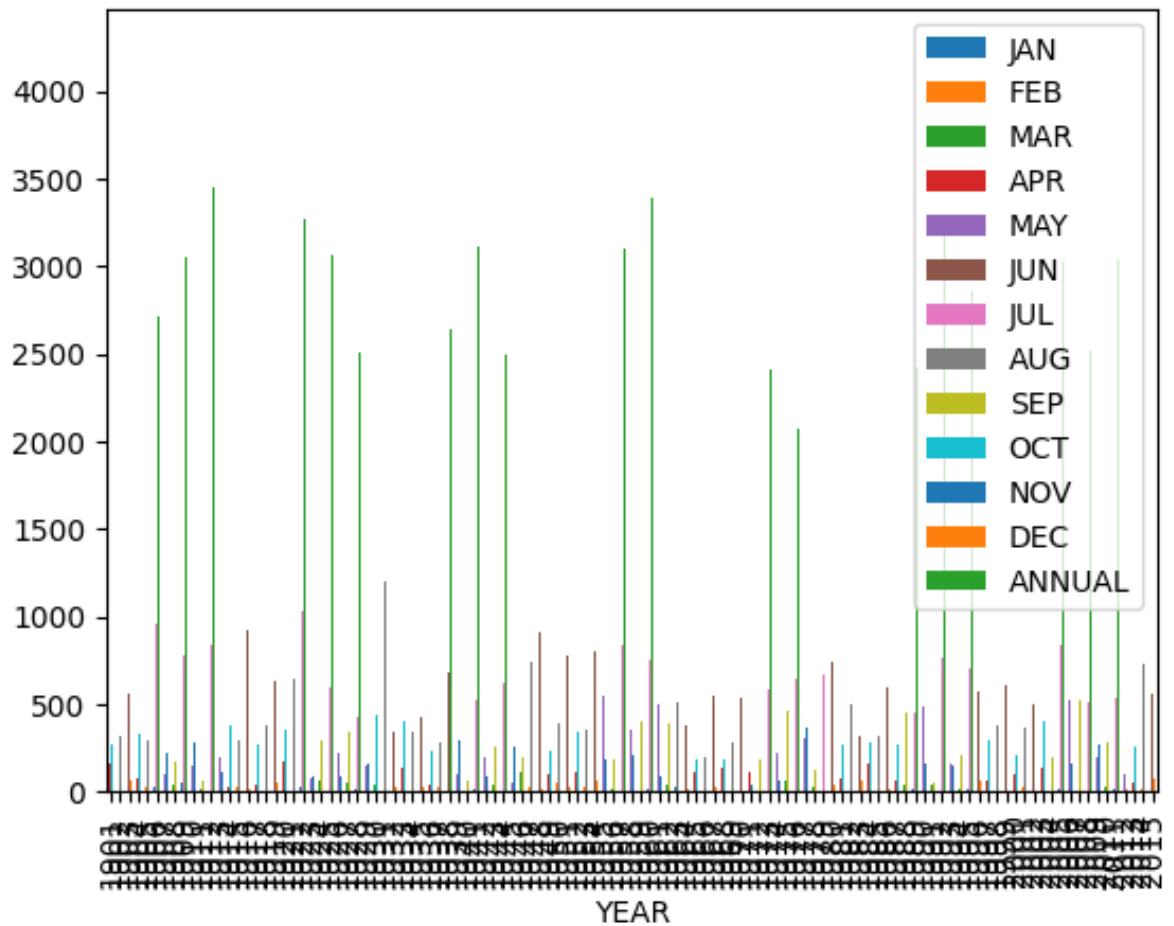
```
Out[144]: (array([[115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [114., 1., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [ 95., 20., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [ 44., 44., 14., 9., 4., 0., 0., 0., 0., 0.,
       0.],
      [  0., 3., 12., 37., 30., 22., 9., 2., 0.,
       0.],
      [  0., 2., 14., 20., 40., 21., 13., 3., 1.,
       0.],
      [  0., 27., 46., 31., 8., 0., 2., 1., 0.,
       0.],
      [ 29., 50., 30., 6., 0., 0., 0., 0., 0.,
       0.],
      [  5., 61., 44., 5., 0., 0., 0., 0., 0.,
       0.],
      [ 56., 54., 5., 0., 0., 0., 0., 0., 0.,
       0.],
      [113, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]]),
```

```
[1155, 2., 0., 0., 0., 0., 0., 0., 0.,  
0.]),  
array([ 0. , 152.65, 305.3 , 457.95, 610.6 , 763.25, 91  
5.9 ,  
1068.55, 1221.2 , 1373.85, 1526.5 ]),  
<a list of 12 BarContainer objects>)
```



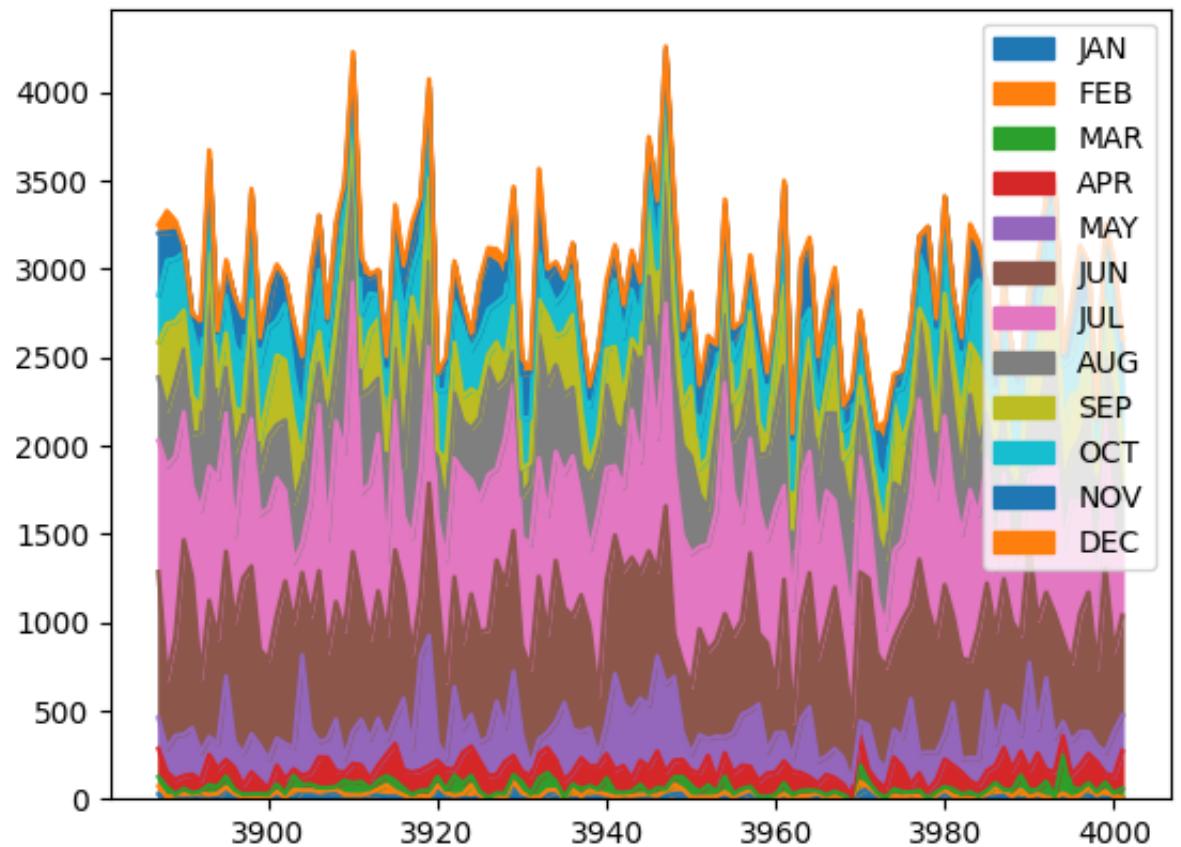
In [145]: `x.plot.bar(x="YEAR")`

Out[145]: <Axes: xlabel='YEAR'>



In [146]: `y.plot.area()`

Out[146]: <Axes: >



WEST RAJASTHAN

In [147]: `x=df[df["SUBDIVISION"]=="WEST RAJASTHAN"]
x`

Out[147]:

		index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1817	1817		WEST RAJASTHAN	1901	6.7	0.0	1.1	0.0	6.1	3.0	79.0	59.2	1.0
1818	1818		WEST RAJASTHAN	1902	0.0	0.0	0.0	0.5	4.0	49.1	27.0	71.3	41.8
1819	1819		WEST RAJASTHAN	1903	1.7	1.3	5.5	0.0	4.2	2.7	154.8	87.1	49.3
1820	1820		WEST RAJASTHAN	1904	3.8	2.9	16.3	0.7	11.4	14.6	39.8	45.6	21.4
1821	1821		WEST RAJASTHAN	1905	6.3	4.8	0.7	1.3	0.3	4.9	30.1	0.6	64.5
...
1927	1927		WEST RAJASTHAN	2011	0.0	11.8	1.5	1.5	7.8	24.4	88.5	166.8	116.3
1928	1928		WEST RAJASTHAN	2012	0.5	0.0	0.0	9.5	10.4	5.3	40.4	166.7	92.0
1929	1929		WEST RAJASTHAN	2013	8.6	21.8	4.2	3.1	1.7	37.6	104.5	138.2	58.7
1930	1930		WEST RAJASTHAN	2014	0.8	2.2	4.7	8.4	23.0	13.8	94.3	69.6	84.9
1931	1931		WEST RAJASTHAN	2015	1.4	0.9	30.3	25.2	15.5	53.2	234.6	60.5	35.7

115 rows × 20 columns

In [148]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out[148]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AN
1817	1901	6.7	0.0	1.1	0.0	6.1	3.0	79.0	59.2	1.0	2.1	0.0	0.6	
1818	1902	0.0	0.0	0.0	0.5	4.0	49.1	27.0	71.3	41.8	1.8	0.0	0.0	
1819	1903	1.7	1.3	5.5	0.0	4.2	2.7	154.8	87.1	49.3	0.1	0.0	0.5	
1820	1904	3.8	2.9	16.3	0.7	11.4	14.6	39.8	45.6	21.4	1.4	2.9	7.1	
1821	1905	6.3	4.8	0.7	1.3	0.3	4.9	30.1	0.6	64.5	0.0	0.0	0.9	
...	
1927	2011	0.0	11.8	1.5	1.5	7.8	24.4	88.5	166.8	116.3	0.1	0.0	0.0	
1928	2012	0.5	0.0	0.0	9.5	10.4	5.3	40.4	166.7	92.0	1.9	0.0	0.6	
1929	2013	8.6	21.8	4.2	3.1	1.7	37.6	104.5	138.2	58.7	10.1	1.0	0.0	
1930	2014	0.8	2.2	4.7	8.4	23.0	13.8	94.3	69.6	84.9	0.5	0.2	0.0	
1931	2015	1.4	0.9	30.3	25.2	15.5	53.2	234.6	60.5	35.7	1.1	0.1	0.0	

115 rows × 14 columns

In [149]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

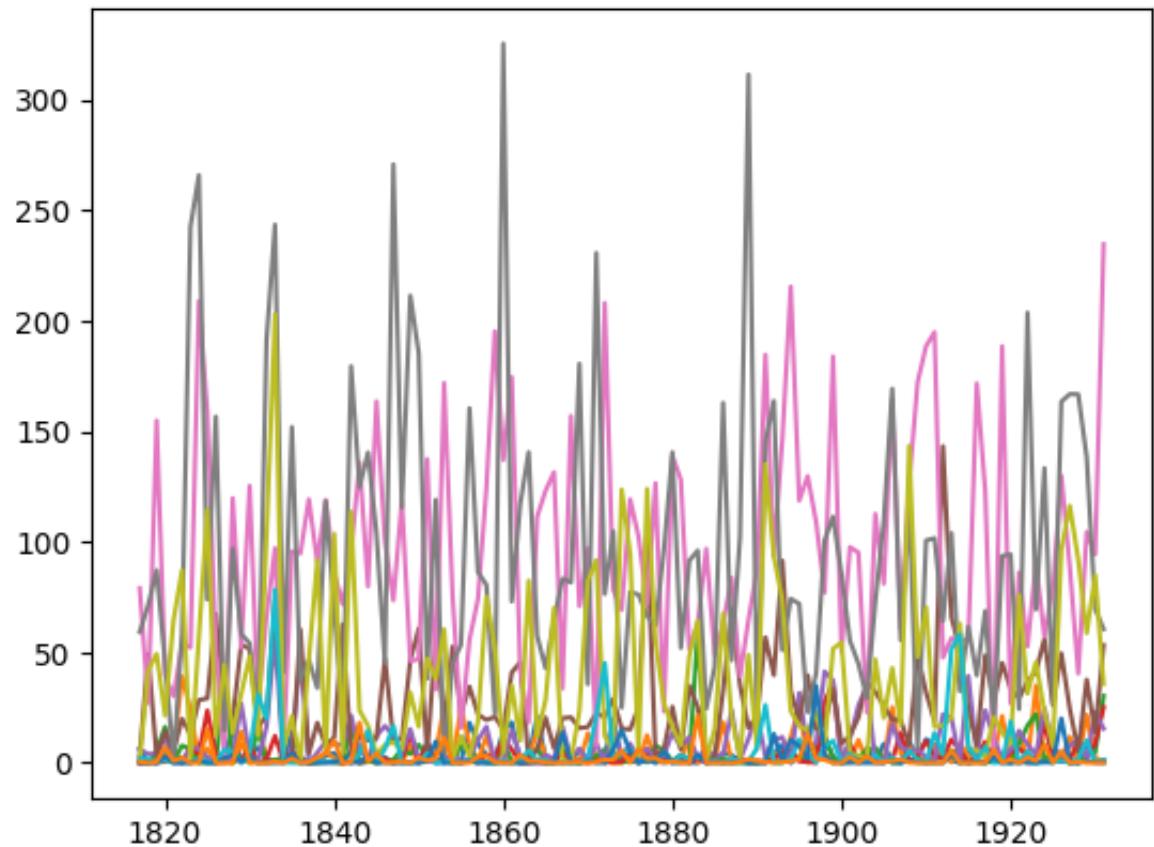
Out[149]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1817	6.7	0.0	1.1	0.0	6.1	3.0	79.0	59.2	1.0	2.1	0.0	0.6
1818	0.0	0.0	0.0	0.5	4.0	49.1	27.0	71.3	41.8	1.8	0.0	0.0
1819	1.7	1.3	5.5	0.0	4.2	2.7	154.8	87.1	49.3	0.1	0.0	0.5
1820	3.8	2.9	16.3	0.7	11.4	14.6	39.8	45.6	21.4	1.4	2.9	7.1
1821	6.3	4.8	0.7	1.3	0.3	4.9	30.1	0.6	64.5	0.0	0.0	0.9
...
1927	0.0	11.8	1.5	1.5	7.8	24.4	88.5	166.8	116.3	0.1	0.0	0.0
1928	0.5	0.0	0.0	9.5	10.4	5.3	40.4	166.7	92.0	1.9	0.0	0.6
1929	8.6	21.8	4.2	3.1	1.7	37.6	104.5	138.2	58.7	10.1	1.0	0.0
1930	0.8	2.2	4.7	8.4	23.0	13.8	94.3	69.6	84.9	0.5	0.2	0.0
1931	1.4	0.9	30.3	25.2	15.5	53.2	234.6	60.5	35.7	1.1	0.1	0.0

115 rows × 12 columns

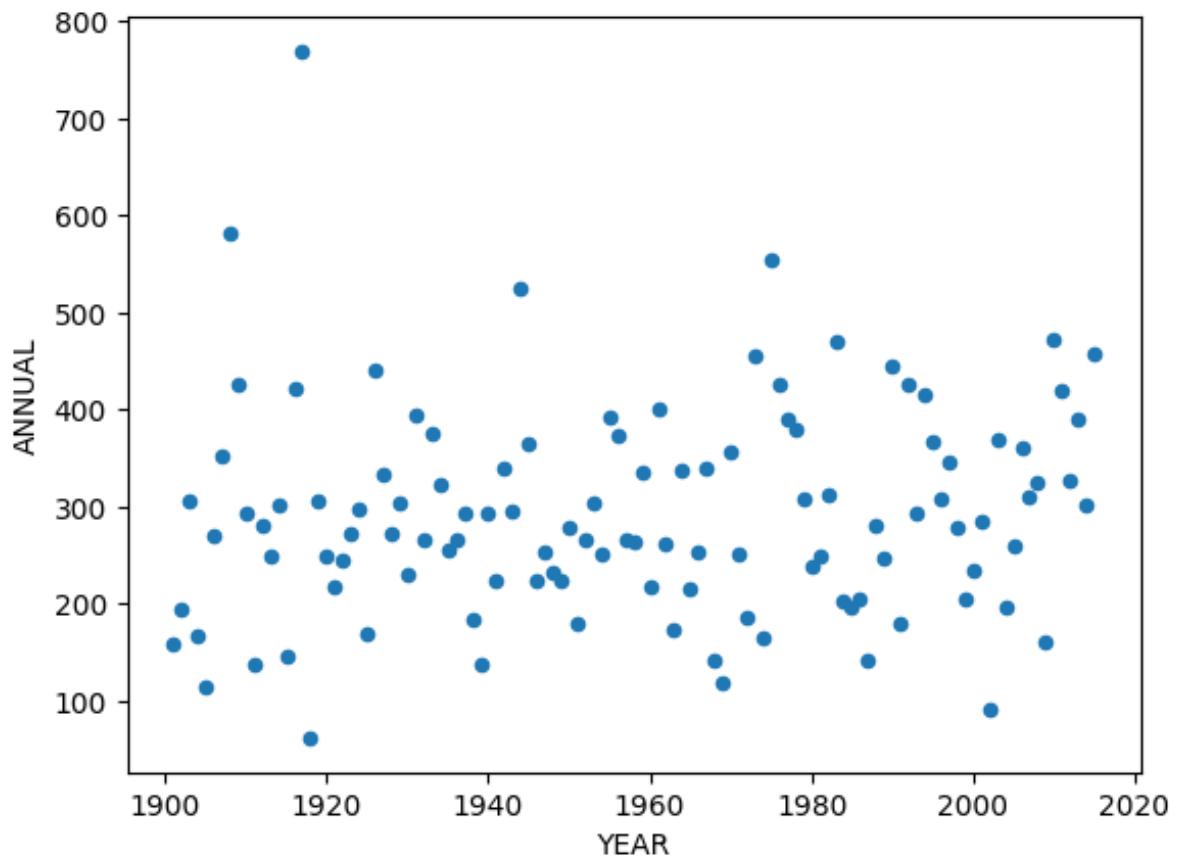
```
In [150]: plt.plot(y)
```

```
Out[150]: [<matplotlib.lines.Line2D at 0x26dfe732dd0>,
 <matplotlib.lines.Line2D at 0x26dfe754b10>,
 <matplotlib.lines.Line2D at 0x26dfe754e10>,
 <matplotlib.lines.Line2D at 0x26dfe755210>,
 <matplotlib.lines.Line2D at 0x26dfe755510>,
 <matplotlib.lines.Line2D at 0x26dfe755910>,
 <matplotlib.lines.Line2D at 0x26dfe755ed0>,
 <matplotlib.lines.Line2D at 0x26dfe756250>,
 <matplotlib.lines.Line2D at 0x26dfe755610>,
 <matplotlib.lines.Line2D at 0x26dfe629d10>,
 <matplotlib.lines.Line2D at 0x26dfe756c50>,
 <matplotlib.lines.Line2D at 0x26dfe757050>]
```



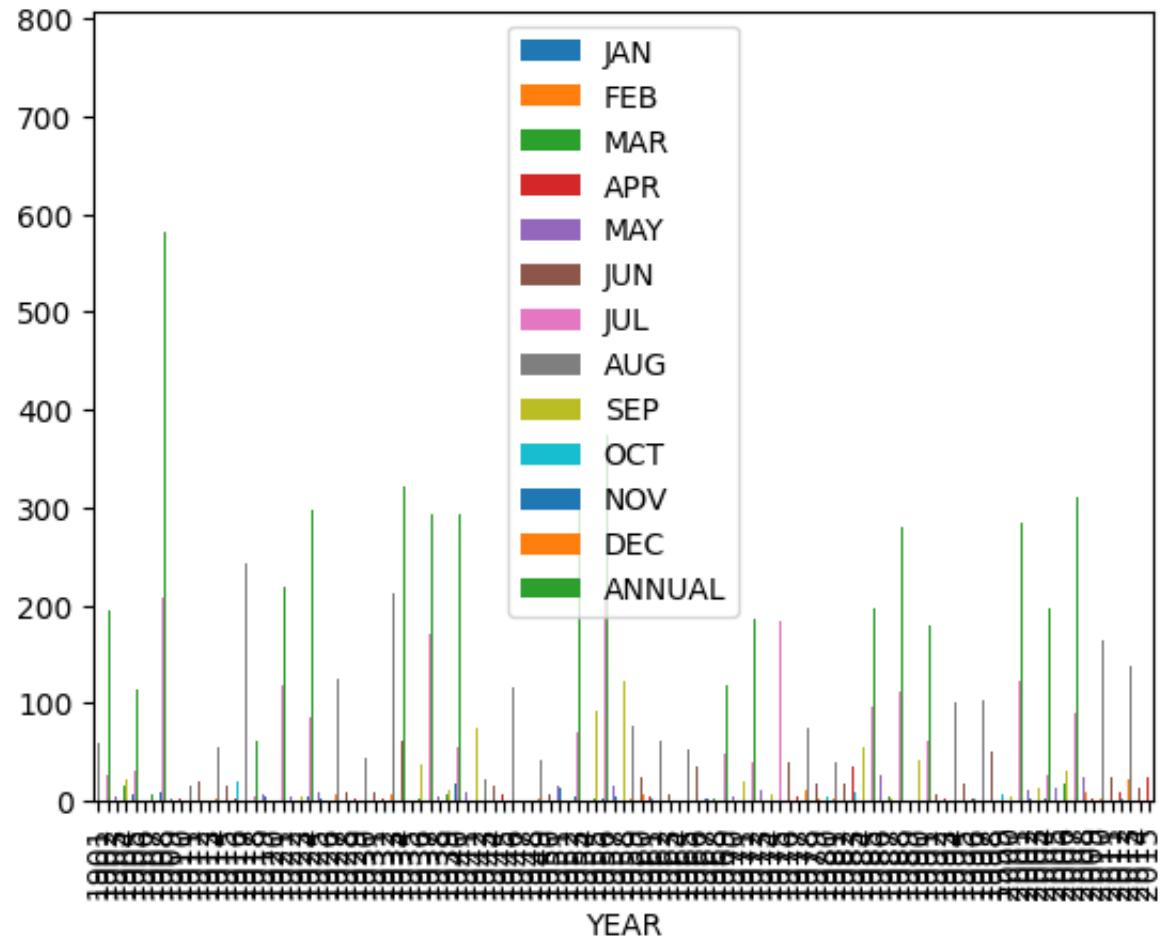
```
In [151]: x.plot.scatter(x="YEAR", y="ANNUAL")
```

```
Out[151]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [152]: x.plot.bar(x="YEAR")
```

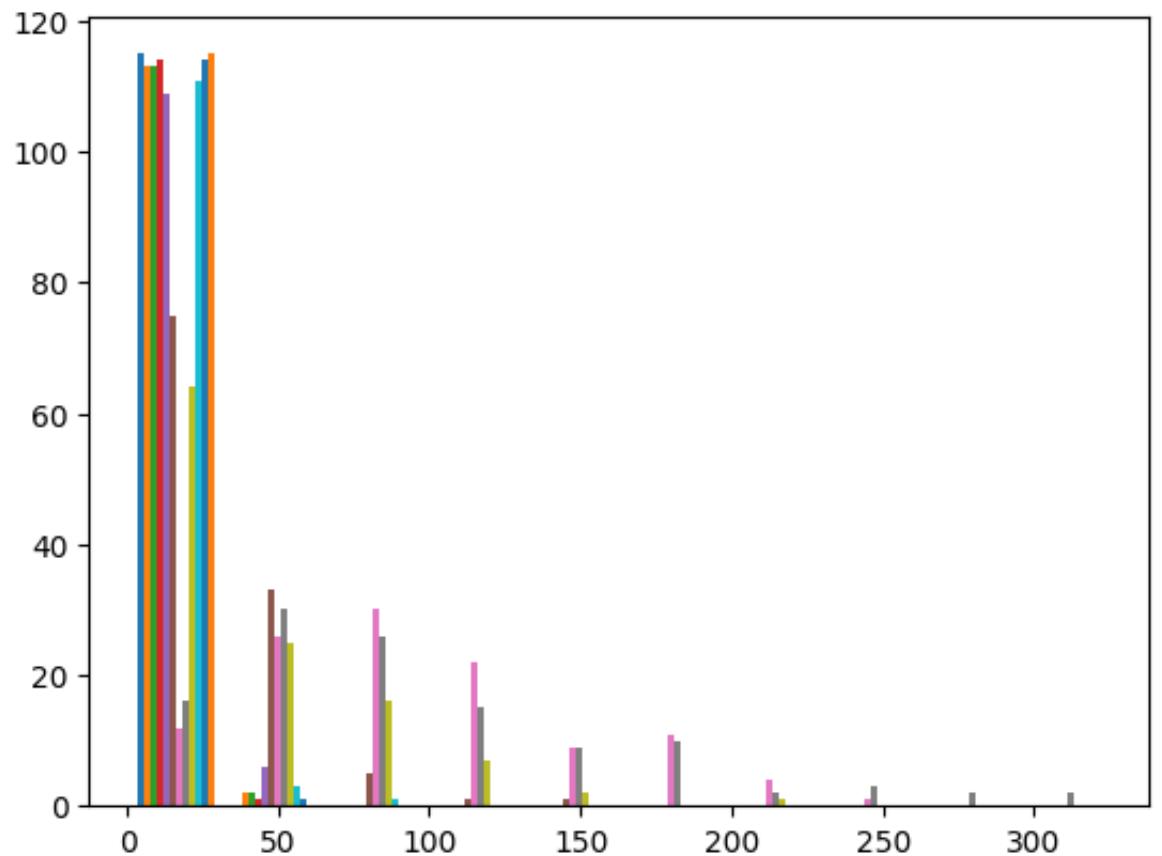
```
Out[152]: <Axes: xlabel='YEAR'>
```



```
In [153]: plt.hist(y)
```

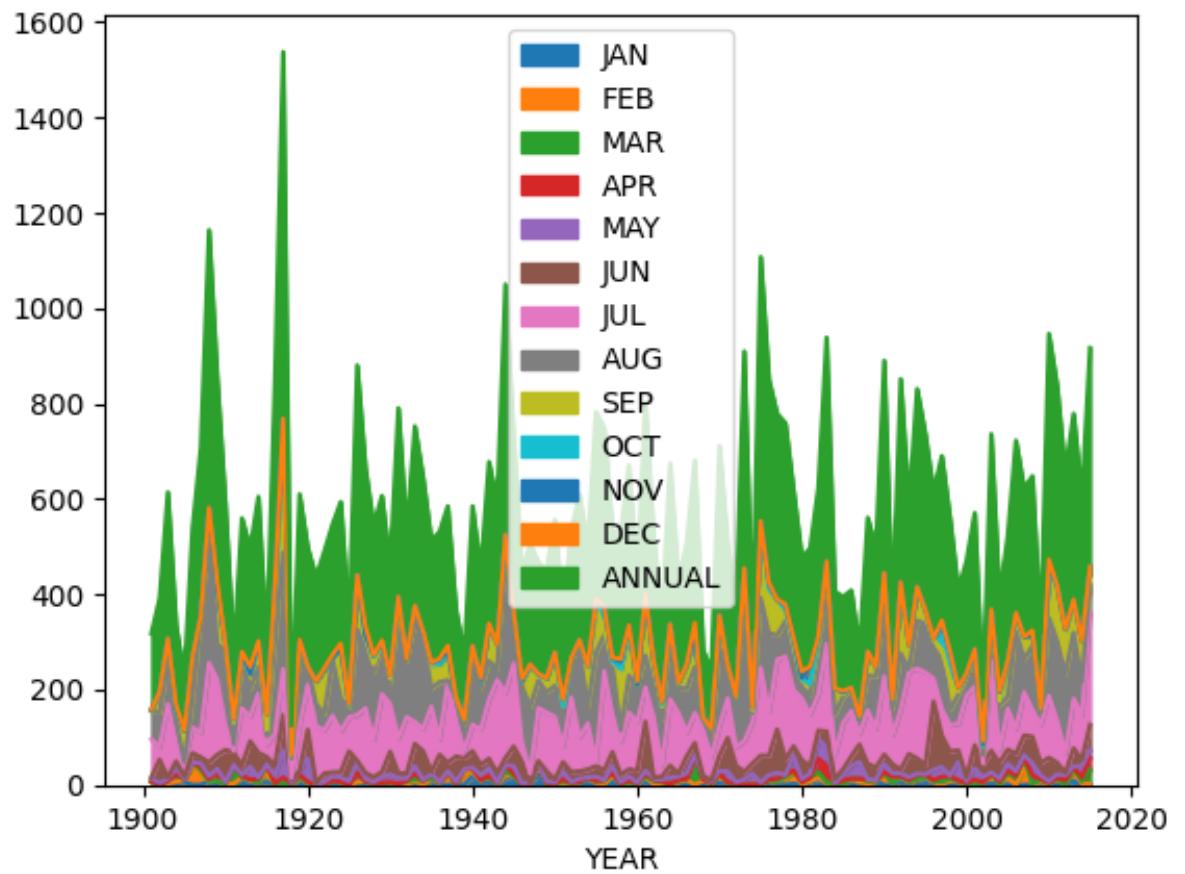
```
Out[153]: (array([[115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [113., 2., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [113., 2., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [114., 1., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [109., 6., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [ 75., 33., 5., 1., 1., 0., 0., 0., 0., 0.,
       0.],
      [ 12., 26., 30., 22., 9., 11., 4., 1., 0.,
       0.],
      [ 16., 30., 26., 15., 9., 10., 2., 3., 2.,
       2.],
      [ 64., 25., 16., 7., 2., 0., 1., 0., 0.,
       0.],
      [111., 3., 1., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [ 8., 10., 15., 12., 10., 12., 8., 10., 10.,
       10.],
      [ 5., 12., 18., 15., 12., 15., 8., 10., 10.,
       10.],
      [ 2., 8., 10., 8., 5., 8., 5., 5., 5., 5.,
       5.],
      [ 1., 5., 7., 5., 3., 5., 3., 3., 3., 3.,
       3.],
      [ 0., 2., 3., 2., 1., 2., 1., 1., 1., 1.,
       1.]]),
```

```
..., [114., 1., 0., 0., 0., 0., 0., 0., 0., 0., 0.],  
0.], [115., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.,  
0.]), array([ 0. , 32.53, 65.06, 97.59, 130.12, 162.65, 195.18, 22  
7.71,  
260.24, 292.77, 325.3 ]),  
<a list of 12 BarContainer objects>)
```



```
In [154]: x.plot.area(x="YEAR")
```

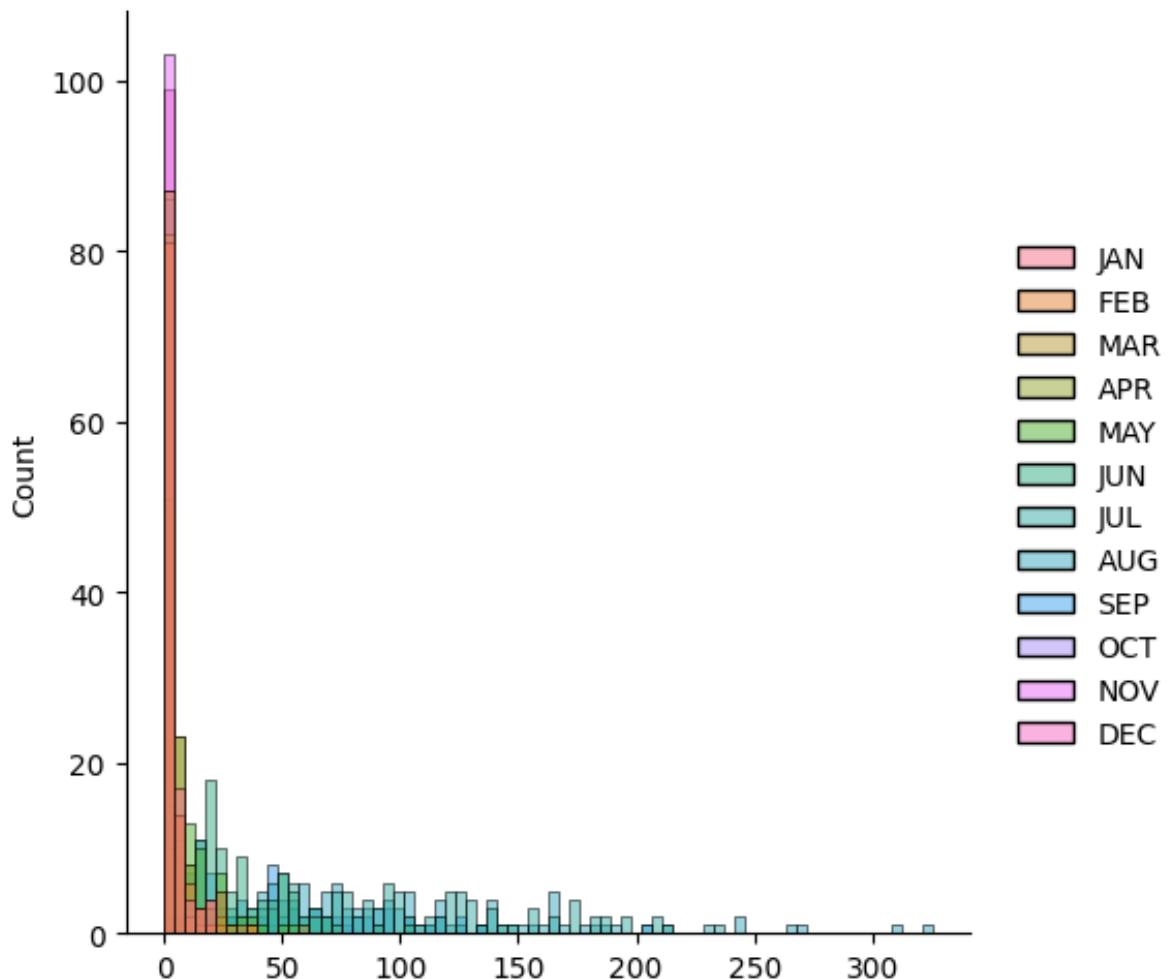
```
Out[154]: <Axes: xlabel='YEAR'>
```



In [155]: `sns.displot(y)`

```
C:\Users\Gokul Jana\AppData\Local\Programs\Python\Python311\Lib\site-packages\seaborn\axisgrid.py:118: UserWarning: The figure layout has changed to tight
  self._figure.tight_layout(*args, **kwargs)
```

Out[155]: <seaborn.axisgrid.FacetGrid at 0x26dfe72a590>



SOUTH INTERIOR KARNATAKA

In [156]: `x=df[df["SUBDIVISION"]=="SOUTH INTERIOR KARNATAKA"]
x`

Out[156]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEF
3772	3772	SOUTH INTERIOR KARNATAKA	1901	4.9	31.8	3.0	32.7	109.6	106.0	210.0	109.2	140.8
3773	3773	SOUTH INTERIOR KARNATAKA	1902	1.9	0.5	6.7	42.6	97.7	91.7	210.0	82.1	138.4
3774	3774	SOUTH INTERIOR KARNATAKA	1903	0.3	0.0	1.1	11.6	125.1	129.7	284.4	155.7	197.1
3775	3775	SOUTH INTERIOR KARNATAKA	1904	1.0	0.5	5.2	43.5	144.7	167.9	197.1	73.2	89.6
3776	3776	SOUTH INTERIOR KARNATAKA	1905	1.7	7.9	14.2	23.6	118.6	95.9	148.4	140.6	43.1
...
3882	3882	SOUTH INTERIOR KARNATAKA	2011	2.1	12.4	12.4	80.2	83.5	177.1	202.4	199.5	111.2
3883	3883	SOUTH INTERIOR KARNATAKA	2012	4.6	5.5	8.1	99.0	45.6	81.8	144.7	236.5	100.6
3884	3884	SOUTH INTERIOR KARNATAKA	2013	0.5	10.1	11.7	34.6	95.6	176.2	307.4	151.7	191.8
3885	3885	SOUTH INTERIOR KARNATAKA	2014	0.4	2.4	17.7	46.7	130.5	106.8	271.6	254.6	161.6
3886	3886	SOUTH INTERIOR KARNATAKA	2015	1.7	0.2	24.4	80.5	125.3	218.7	112.0	136.6	164.5

115 rows × 20 columns

In [157]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X"])`

Out[157]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
3772	1901	4.9	31.8	3.0	32.7	109.6	106.0	210.0	109.2	140.8	170.1	72.5	12.3
3773	1902	1.9	0.5	6.7	42.6	97.7	91.7	210.0	82.1	138.4	219.1	44.6	84.9
3774	1903	0.3	0.0	1.1	11.6	125.1	129.7	284.4	155.7	197.1	154.2	186.6	24.1
3775	1904	1.0	0.5	5.2	43.5	144.7	167.9	197.1	73.2	89.6	120.4	2.5	0.3
3776	1905	1.7	7.9	14.2	23.6	118.6	95.9	148.4	140.6	43.1	142.8	22.4	0.3
...
3882	2011	2.1	12.4	12.4	80.2	83.5	177.1	202.4	199.5	111.2	144.8	56.7	5.0
3883	2012	4.6	5.5	8.1	99.0	45.6	81.8	144.7	236.5	100.6	62.8	82.6	6.2
3884	2013	0.5	10.1	11.7	34.6	95.6	176.2	307.4	151.7	191.8	103.7	24.9	2.4
3885	2014	0.4	2.4	17.7	46.7	130.5	106.8	271.6	254.6	161.6	152.9	20.2	18.7
3886	2015	1.7	0.2	24.4	80.5	125.3	218.7	112.0	136.6	164.5	106.1	138.1	4.4

115 rows × 14 columns

In [158]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`

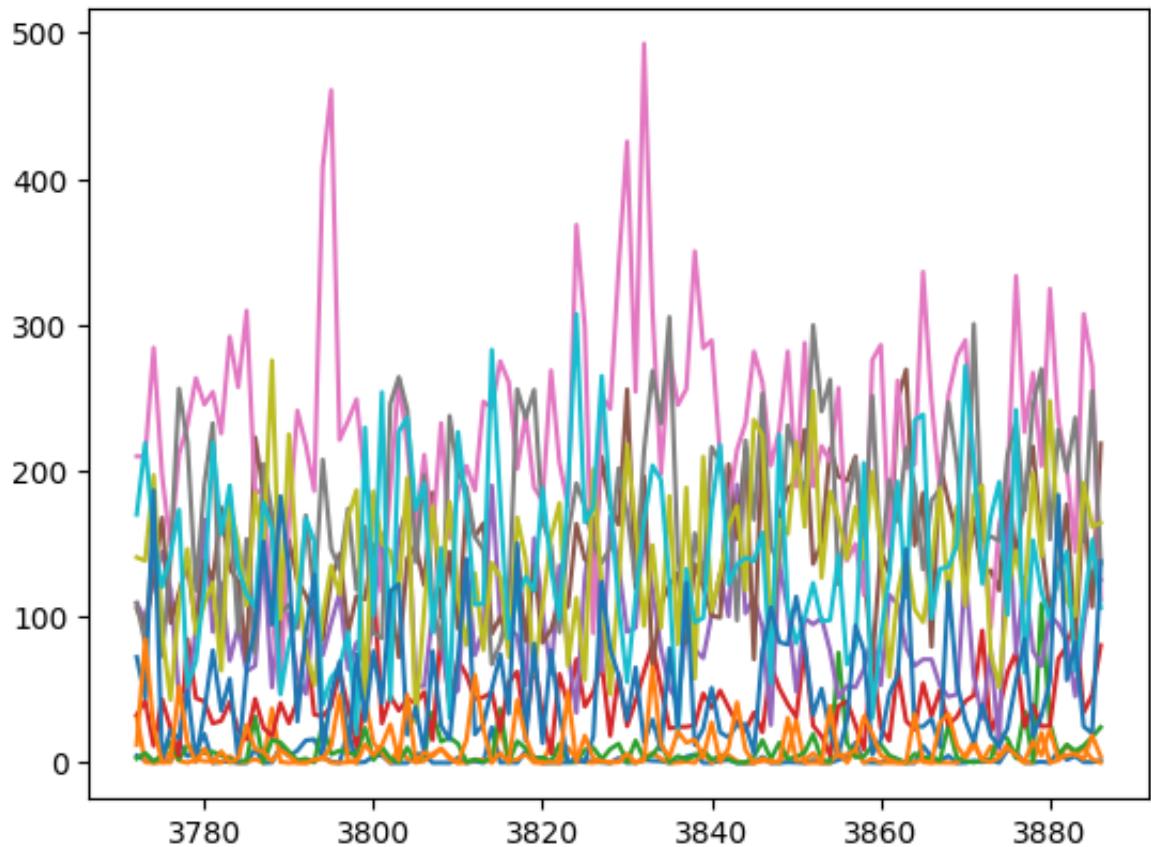
Out[158]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
3772	4.9	31.8	3.0	32.7	109.6	106.0	210.0	109.2	140.8	170.1	72.5	12.3
3773	1.9	0.5	6.7	42.6	97.7	91.7	210.0	82.1	138.4	219.1	44.6	84.9
3774	0.3	0.0	1.1	11.6	125.1	129.7	284.4	155.7	197.1	154.2	186.6	24.1
3775	1.0	0.5	5.2	43.5	144.7	167.9	197.1	73.2	89.6	120.4	2.5	0.3
3776	1.7	7.9	14.2	23.6	118.6	95.9	148.4	140.6	43.1	142.8	22.4	0.3
...
3882	2.1	12.4	12.4	80.2	83.5	177.1	202.4	199.5	111.2	144.8	56.7	5.0
3883	4.6	5.5	8.1	99.0	45.6	81.8	144.7	236.5	100.6	62.8	82.6	6.2
3884	0.5	10.1	11.7	34.6	95.6	176.2	307.4	151.7	191.8	103.7	24.9	2.4
3885	0.4	2.4	17.7	46.7	130.5	106.8	271.6	254.6	161.6	152.9	20.2	18.7
3886	1.7	0.2	24.4	80.5	125.3	218.7	112.0	136.6	164.5	106.1	138.1	4.4

115 rows × 12 columns

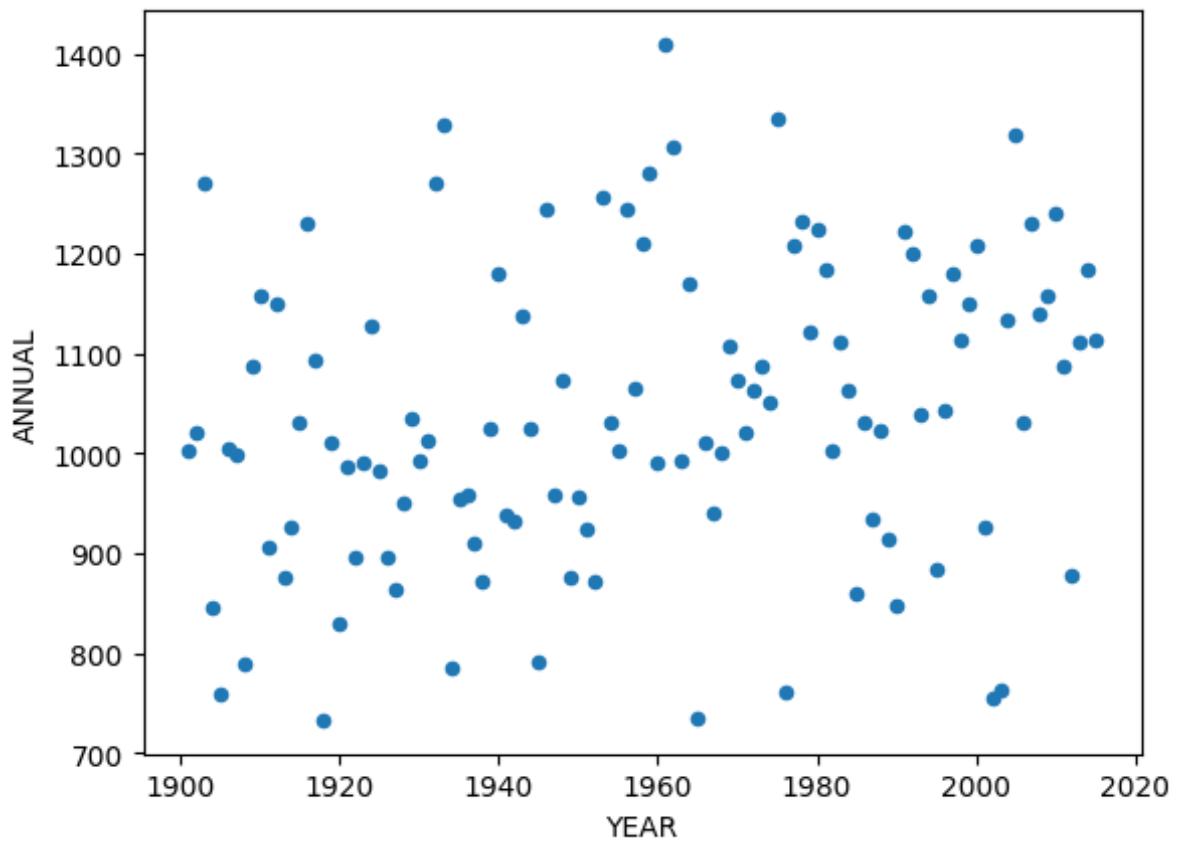
```
In [159]: plt.plot(y)
```

```
Out[159]: [<matplotlib.lines.Line2D at 0x26d8053add0>,
 <matplotlib.lines.Line2D at 0x26d81e92310>,
 <matplotlib.lines.Line2D at 0x26d81e92550>,
 <matplotlib.lines.Line2D at 0x26d81e92750>,
 <matplotlib.lines.Line2D at 0x26d81e92a10>,
 <matplotlib.lines.Line2D at 0x26d81e92e10>,
 <matplotlib.lines.Line2D at 0x26d81e93290>,
 <matplotlib.lines.Line2D at 0x26d81e937d0>,
 <matplotlib.lines.Line2D at 0x26d81e92b50>,
 <matplotlib.lines.Line2D at 0x26d81e92f90>,
 <matplotlib.lines.Line2D at 0x26d81eb0190>,
 <matplotlib.lines.Line2D at 0x26d80520e50>]
```



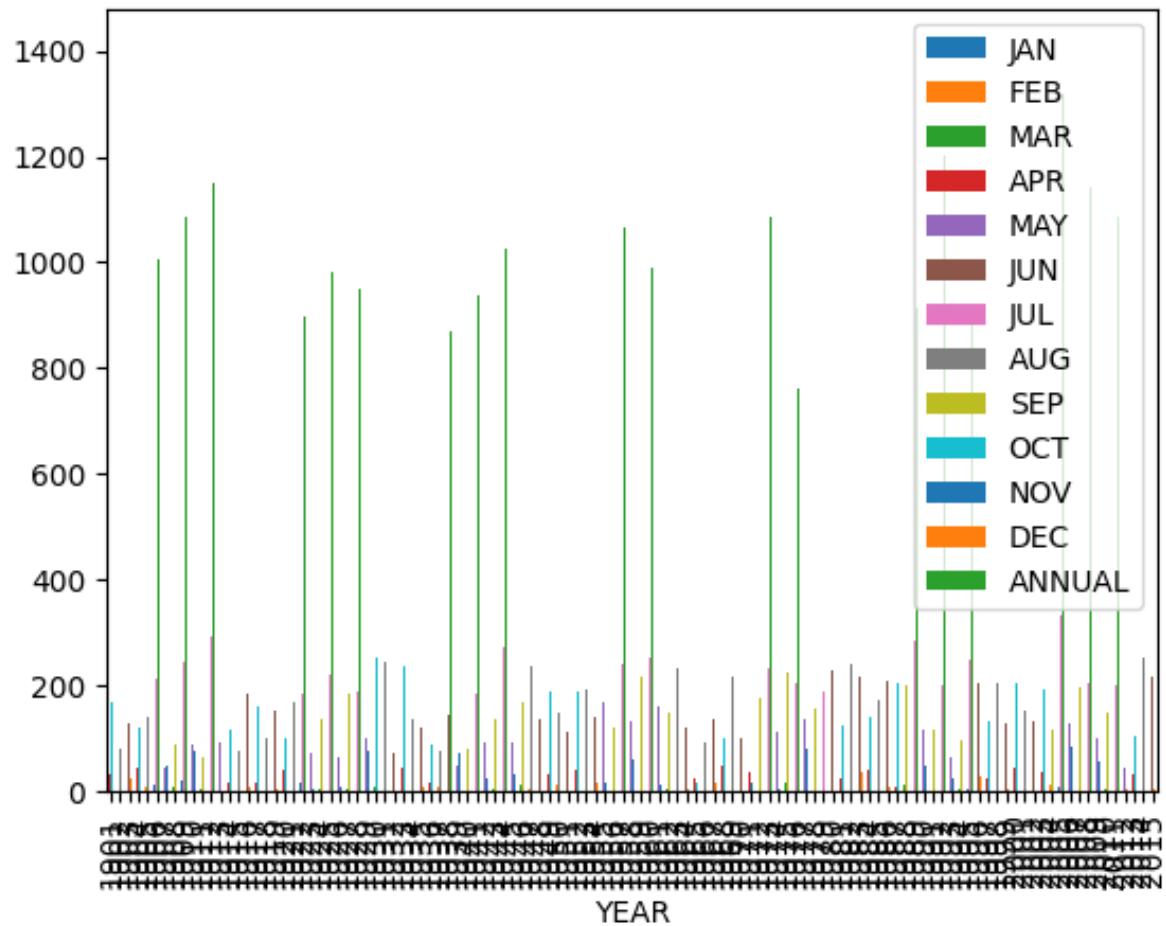
```
In [160]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

```
Out[160]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [161]: x.plot.bar(x="YEAR")
```

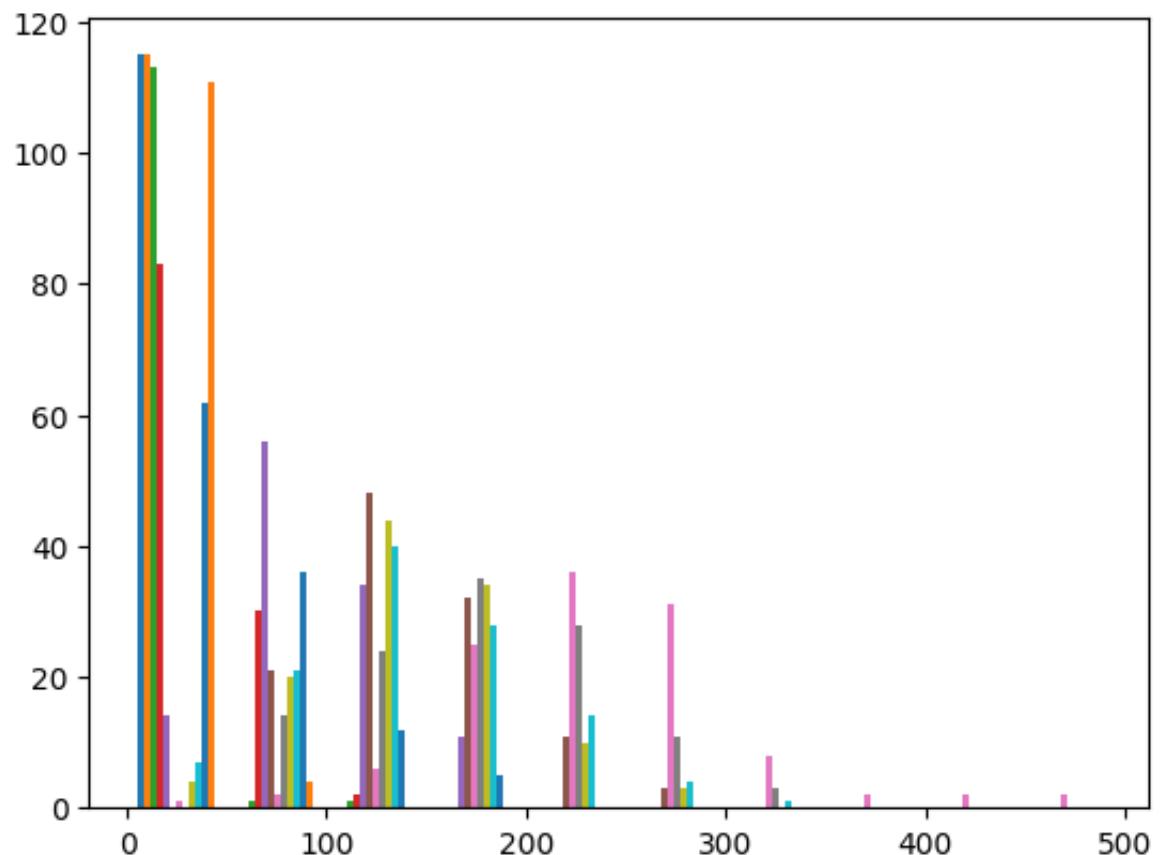
```
Out[161]: <Axes: xlabel='YEAR'>
```



```
In [162]: plt.hist(y)
```

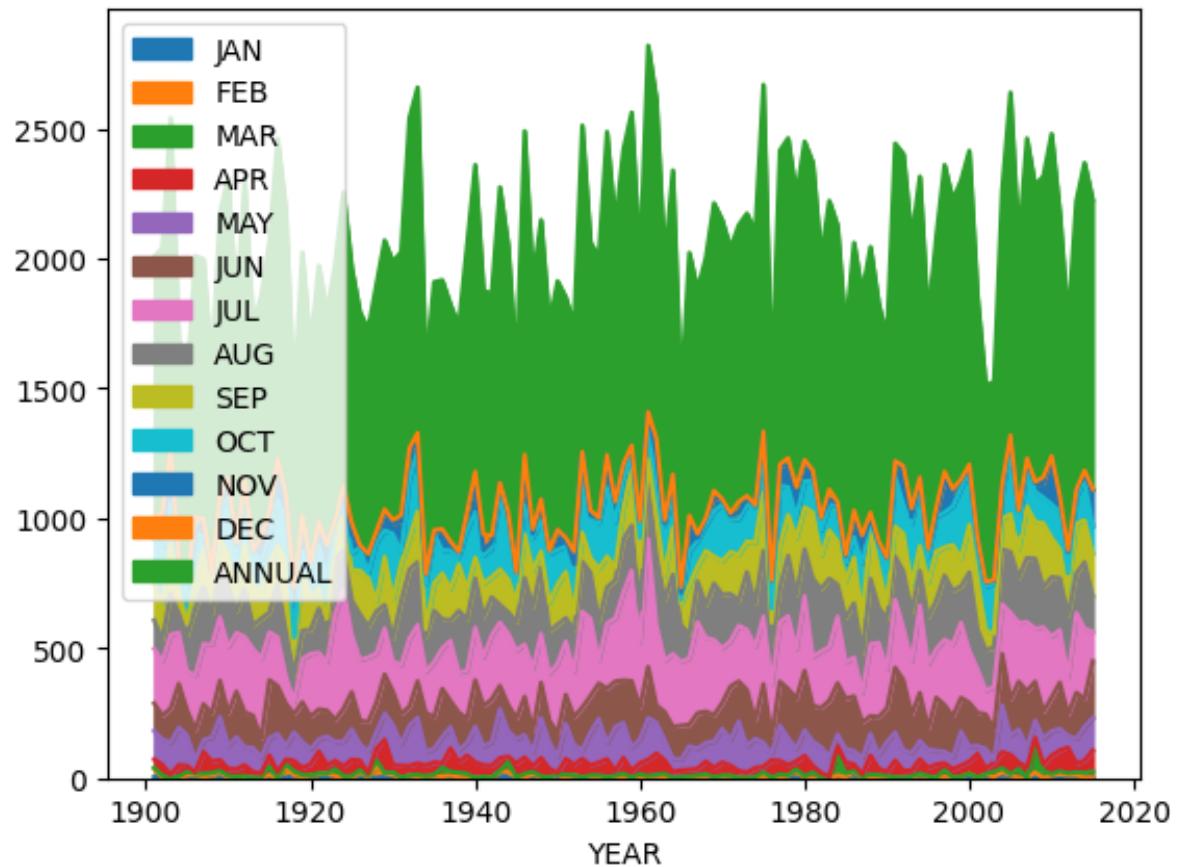
```
Out[162]: (array([[115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[113., 1., 1., 0., 0., 0., 0., 0., 0., 0.,
0.],
[83., 30., 2., 0., 0., 0., 0., 0., 0., 0.,
0.],
[14., 56., 34., 11., 0., 0., 0., 0., 0., 0.,
0.],
[0., 21., 48., 32., 11., 3., 0., 0., 0., 0.,
0.],
[1., 2., 6., 25., 36., 31., 8., 2., 2.,
2.],
[0., 14., 24., 35., 28., 11., 3., 0., 0.,
0.],
[4., 20., 44., 34., 10., 3., 0., 0., 0.,
0.],
[7., 21., 40., 28., 14., 4., 1., 0., 0.,
0.],
0.],
```

```
[ 62.,  36.,  12.,   5.,   0.,   0.,   0.,   0.,   0.,
 0.],  
[111.,   4.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,
0.]),  
array([  0. ,   49.27,  98.54, 147.81, 197.08, 246.35, 295.62, 34
4.89,
 394.16, 443.43, 492.7 ]),  
<a list of 12 BarContainer objects>)
```



In [163]: `x.plot.area(x="YEAR")`

Out[163]: <Axes: xlabel='YEAR'>



JAMMU & KASHMIR

In [221]: `x=df[df["SUBDIVISION"]=="JAMMU & KASHMIR"]
x`

Out[221]:

		index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1702	1702		JAMMU & KASHMIR	1901	66.4	69.3	69.6	132.2	105.8	53.4	171.7	181.3	187.1	187.1	187.1	187.1	
1703	1703		JAMMU & KASHMIR	1902	6.5	9.7	91.3	100.5	70.7	113.3	108.4	136.9	136.9	136.9	136.9	136.9	136.9
1704	1704		JAMMU & KASHMIR	1903	96.2	21.5	238.6	58.7	57.3	18.9	332.5	218.6	218.6	218.6	218.6	218.6	218.6
1705	1705		JAMMU & KASHMIR	1904	110.6	17.3	145.2	64.5	67.8	25.9	182.3	132.2	132.2	132.2	132.2	132.2	132.2
1706	1706		JAMMU & KASHMIR	1905	146.7	76.3	161.4	71.7	65.2	43.3	145.2	111.5	111.5	111.5	111.5	111.5	111.5
...	
1812	1812		JAMMU & KASHMIR	2011	43.4	211.6	97.8	89.0	32.4	72.5	81.6	131.2	131.2	131.2	131.2	131.2	131.2
1813	1813		JAMMU & KASHMIR	2012	150.9	95.8	45.2	86.6	48.9	32.6	118.8	264.9	264.9	264.9	264.9	264.9	264.9
1814	1814		JAMMU & KASHMIR	2013	52.2	136.4	41.9	47.4	47.4	80.5	125.1	219.1	219.1	219.1	219.1	219.1	219.1
1815	1815		JAMMU & KASHMIR	2014	75.8	64.0	153.1	76.1	52.7	25.3	100.5	134.6	134.6	134.6	134.6	134.6	134.6
1816	1816		JAMMU & KASHMIR	2015	27.9	187.2	341.4	173.3	64.6	121.4	233.2	129.2	129.2	129.2	129.2	129.2	129.2

114 rows × 20 columns

In [222]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out [222]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1702	1901	66.4	69.3	69.6	132.2	105.8	53.4	171.7	181.3	101.8	24.1	0.0	4.4
1703	1902	6.5	9.7	91.3	100.5	70.7	113.3	108.4	136.9	62.2	15.1	44.0	1.8
1704	1903	96.2	21.5	238.6	58.7	57.3	18.9	332.5	218.6	176.9	10.7	15.0	41.8
1705	1904	110.6	17.3	145.2	64.5	67.8	25.9	182.3	132.2	62.3	50.0	24.8	99.2
1706	1905	146.7	76.3	161.4	71.7	65.2	43.3	145.2	111.5	239.7	5.8	0.6	90.2
...
1812	2011	43.4	211.6	97.8	89.0	32.4	72.5	81.6	131.2	72.0	19.4	12.9	23.8
1813	2012	150.9	95.8	45.2	86.6	48.9	32.6	118.8	264.9	106.7	15.7	10.8	57.8
1814	2013	52.2	136.4	41.9	47.4	47.4	80.5	125.1	219.1	41.2	34.4	13.4	20.3
1815	2014	75.8	64.0	153.1	76.1	52.7	25.3	100.5	134.6	362.8	32.2	14.1	2.3
1816	2015	27.9	187.2	341.4	173.3	64.6	121.4	233.2	129.2	130.2	87.1	38.1	39.3

114 rows × 14 columns

In [223]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

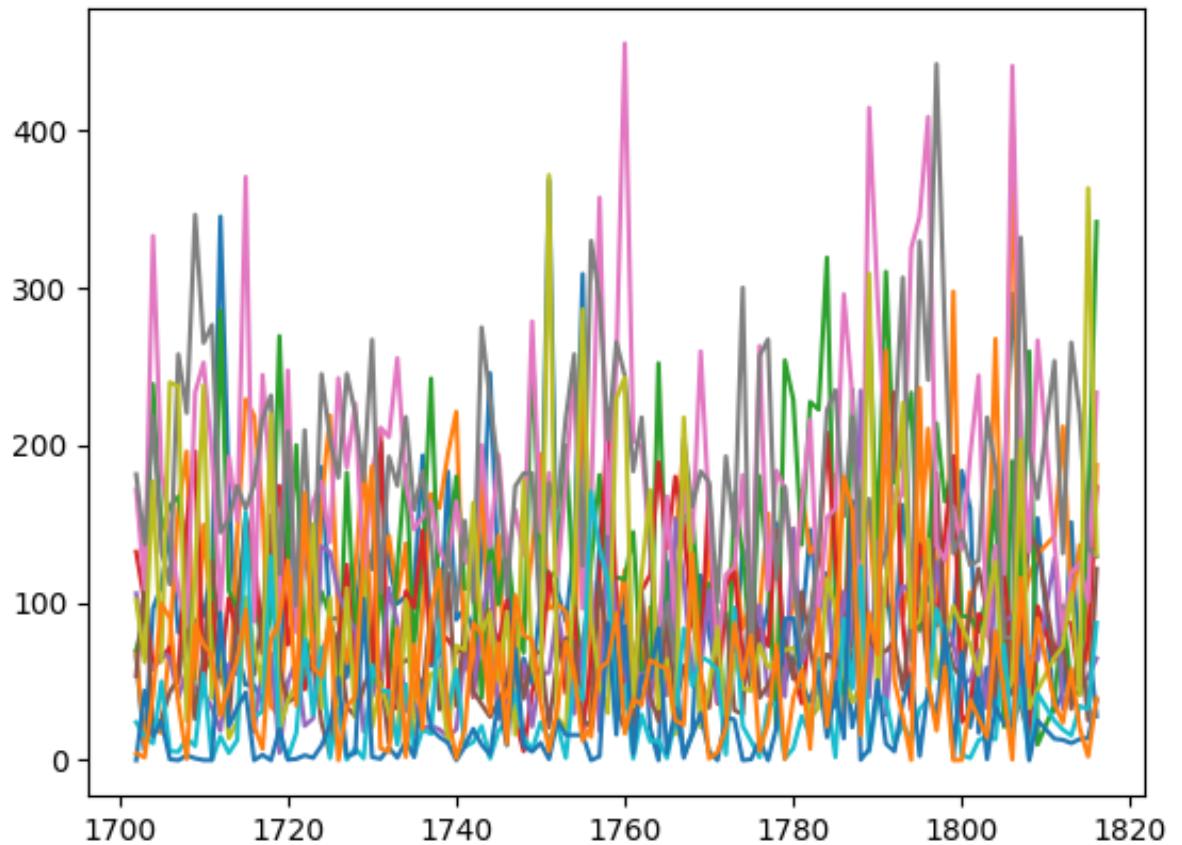
Out [223]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1702	66.4	69.3	69.6	132.2	105.8	53.4	171.7	181.3	101.8	24.1	0.0	4.4
1703	6.5	9.7	91.3	100.5	70.7	113.3	108.4	136.9	62.2	15.1	44.0	1.8
1704	96.2	21.5	238.6	58.7	57.3	18.9	332.5	218.6	176.9	10.7	15.0	41.8
1705	110.6	17.3	145.2	64.5	67.8	25.9	182.3	132.2	62.3	50.0	24.8	99.2
1706	146.7	76.3	161.4	71.7	65.2	43.3	145.2	111.5	239.7	5.8	0.6	90.2
...
1812	43.4	211.6	97.8	89.0	32.4	72.5	81.6	131.2	72.0	19.4	12.9	23.8
1813	150.9	95.8	45.2	86.6	48.9	32.6	118.8	264.9	106.7	15.7	10.8	57.8
1814	52.2	136.4	41.9	47.4	47.4	80.5	125.1	219.1	41.2	34.4	13.4	20.3
1815	75.8	64.0	153.1	76.1	52.7	25.3	100.5	134.6	362.8	32.2	14.1	2.3
1816	27.9	187.2	341.4	173.3	64.6	121.4	233.2	129.2	130.2	87.1	38.1	39.3

114 rows × 12 columns

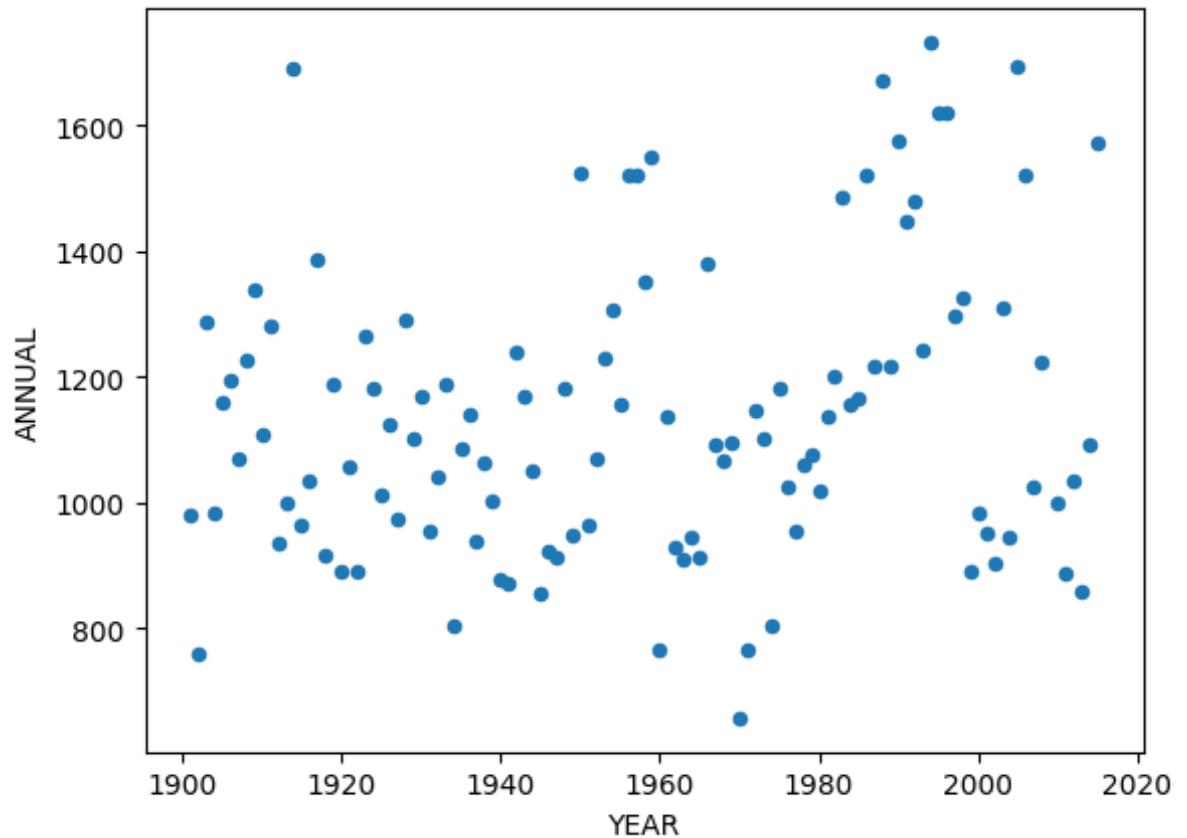
```
In [224]: plt.plot(y)
```

```
Out[224]: [<matplotlib.lines.Line2D at 0x26d96582dd0>,
 <matplotlib.lines.Line2D at 0x26d9658ff10>,
 <matplotlib.lines.Line2D at 0x26d965b1850>,
 <matplotlib.lines.Line2D at 0x26d965b1c90>,
 <matplotlib.lines.Line2D at 0x26d965b1ed0>,
 <matplotlib.lines.Line2D at 0x26d965b2290>,
 <matplotlib.lines.Line2D at 0x26d965b2890>,
 <matplotlib.lines.Line2D at 0x26d965b2c10>,
 <matplotlib.lines.Line2D at 0x26d965b1f90>,
 <matplotlib.lines.Line2D at 0x26d965b2410>,
 <matplotlib.lines.Line2D at 0x26d965b3610>,
 <matplotlib.lines.Line2D at 0x26d965b39d0>]
```



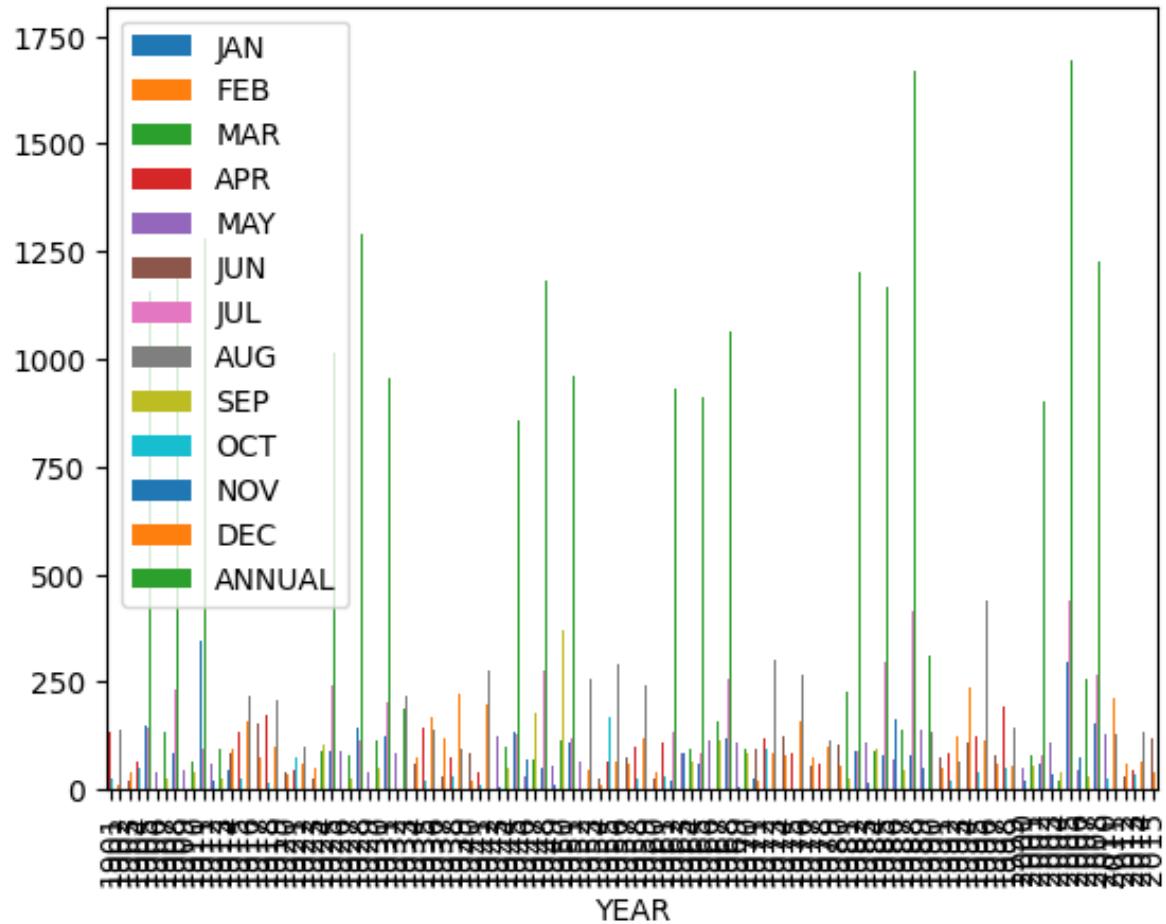
```
In [225]: x.plot.scatter(x="YEAR", y="ANNUAL")
```

```
Out[225]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [226]: x.plot.bar(x="YEAR")
```

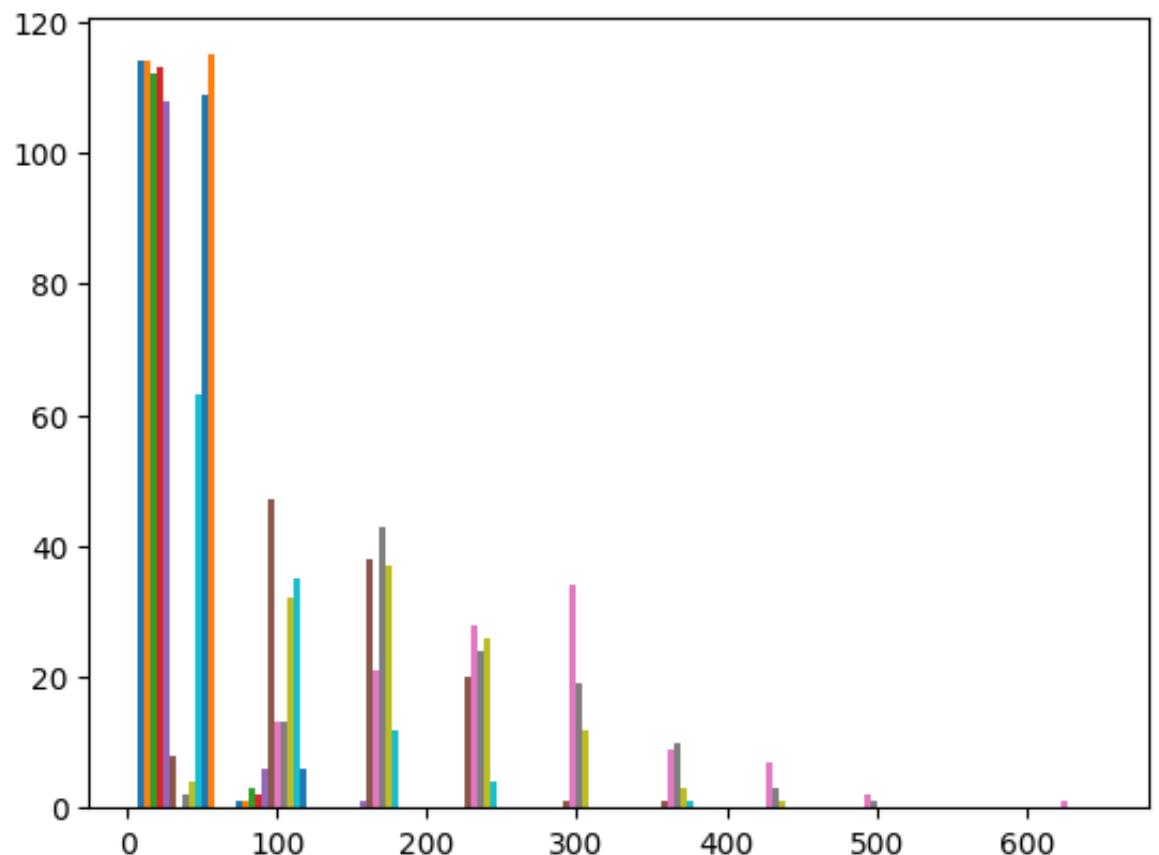
```
Out[226]: <Axes: xlabel='YEAR'>
```



```
In [170]: plt.hist(y)
```

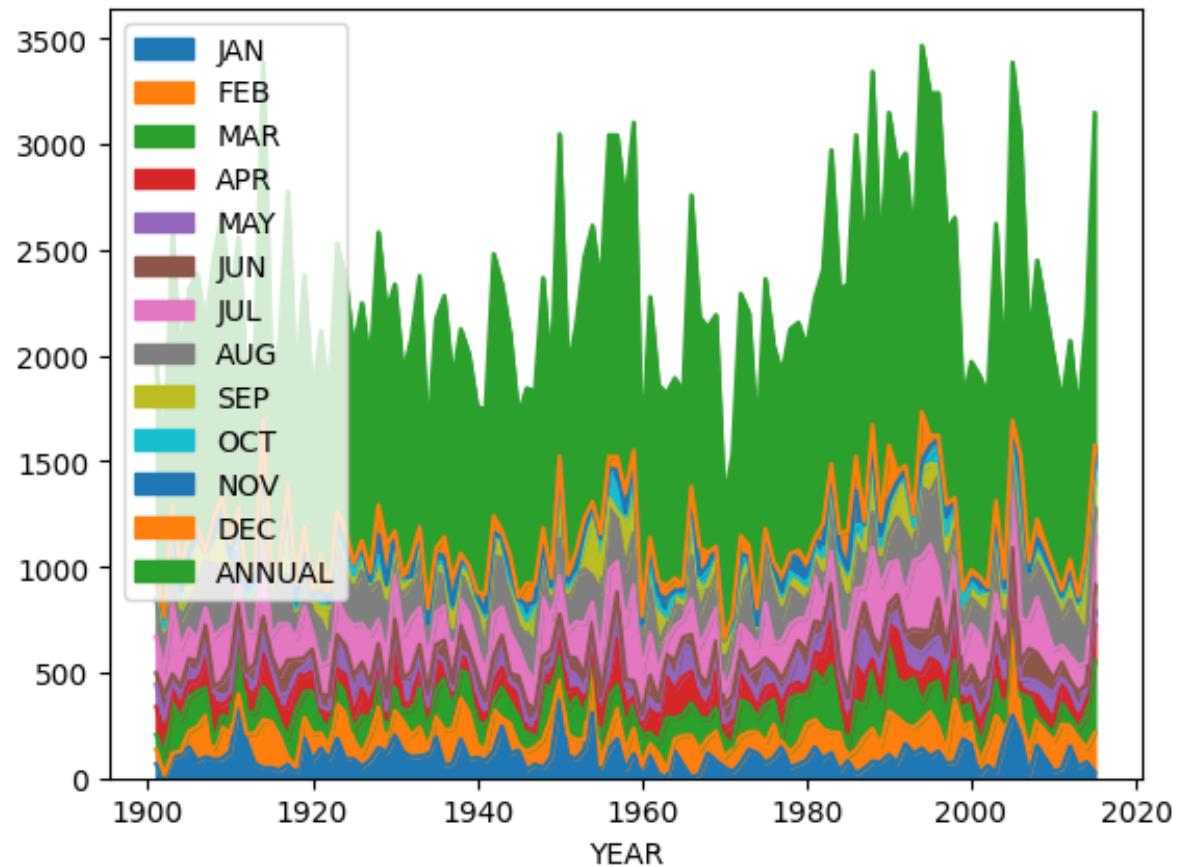
```
Out[170]: (array([[114., 1., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [114., 1., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [112., 3., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [113., 2., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [108., 6., 1., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [ 8., 47., 38., 20., 1., 1., 0., 0., 0., 0.,
       0.],
      [ 0., 13., 21., 28., 34., 9., 7., 2., 0., 0.,
       0.],
      [ 2., 13., 43., 24., 19., 10., 3., 1., 0., 0.,
       0.],
      [ 4., 32., 37., 26., 12., 3., 1., 0., 0., 0.,
       0.],
      [ 63., 35., 12., 4., 0., 1., 0., 0., 0., 0.,
       0.],
      [ 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.]]),
```

```
[109.,   6.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,
0.],
[115.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,
0.]),
array([  0. ,  65.62, 131.24, 196.86, 262.48, 328.1 , 393.72, 45
9.34,
      524.96, 590.58, 656.2 ]),
<a list of 12 BarContainer objects>)
```



In [227]: `x.plot.area(x="YEAR")`

Out[227]: <Axes: xlabel='YEAR'>



HIMACHAL PRADESH

In [228]: `x=df[df["SUBDIVISION"]=="HIMACHAL PRADESH"]
x`

Out[228]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SI
1587	1587	HIMACHAL PRADESH	1901	137.8	174.5	75.0	19.2	89.6	32.7	280.5	459.7	50
1588	1588	HIMACHAL PRADESH	1902	6.5	27.0	104.4	76.2	61.3	78.8	258.6	199.3	110
1589	1589	HIMACHAL PRADESH	1903	76.5	21.4	213.7	25.4	54.7	32.2	157.7	256.5	107
1590	1590	HIMACHAL PRADESH	1904	79.3	22.4	131.7	48.0	90.3	33.1	241.1	184.3	56
1591	1591	HIMACHAL PRADESH	1905	81.3	76.8	160.2	39.3	50.4	43.6	191.1	132.8	119
...
1697	1697	HIMACHAL PRADESH	2011	43.9	97.4	49.7	62.4	45.1	118.3	177.7	380.2	120
1698	1698	HIMACHAL PRADESH	2012	92.3	51.3	28.4	55.9	9.4	31.1	241.5	280.6	130
1699	1699	HIMACHAL PRADESH	2013	79.9	182.6	76.6	28.9	32.6	233.6	208.8	240.0	65
1700	1700	HIMACHAL PRADESH	2014	69.6	124.9	125.2	60.6	68.9	51.7	203.6	146.7	84
1701	1701	HIMACHAL PRADESH	2015	67.2	156.6	192.5	84.9	45.0	85.8	249.9	195.9	75

115 rows × 20 columns

In [229]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out[229]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1587	1901	137.8	174.5	75.0	19.2	89.6	32.7	280.5	459.7	53.0	3.9	0.0	19.1
1588	1902	6.5	27.0	104.4	76.2	61.3	78.8	258.6	199.3	113.4	23.6	2.5	0.0
1589	1903	76.5	21.4	213.7	25.4	54.7	32.2	157.7	256.5	107.9	5.8	0.2	41.4
1590	1904	79.3	22.4	131.7	48.0	90.3	33.1	241.1	184.3	56.4	51.6	17.3	32.0
1591	1905	81.3	76.8	160.2	39.3	50.4	43.6	191.1	132.8	119.1	0.3	0.9	34.4
...
1697	2011	43.9	97.4	49.7	62.4	45.1	118.3	177.7	380.2	120.3	6.0	0.3	6.9
1698	2012	92.3	51.3	28.4	55.9	9.4	31.1	241.5	280.6	133.1	3.1	3.2	21.8
1699	2013	79.9	182.6	76.6	28.9	32.6	233.6	208.8	240.0	65.8	21.8	16.6	24.8
1700	2014	69.6	124.9	125.2	60.6	68.9	51.7	203.6	146.7	84.6	19.3	4.5	49.3
1701	2015	67.2	156.6	192.5	84.9	45.0	85.8	249.9	195.9	75.5	17.7	14.5	25.0

115 rows × 14 columns

In [230]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

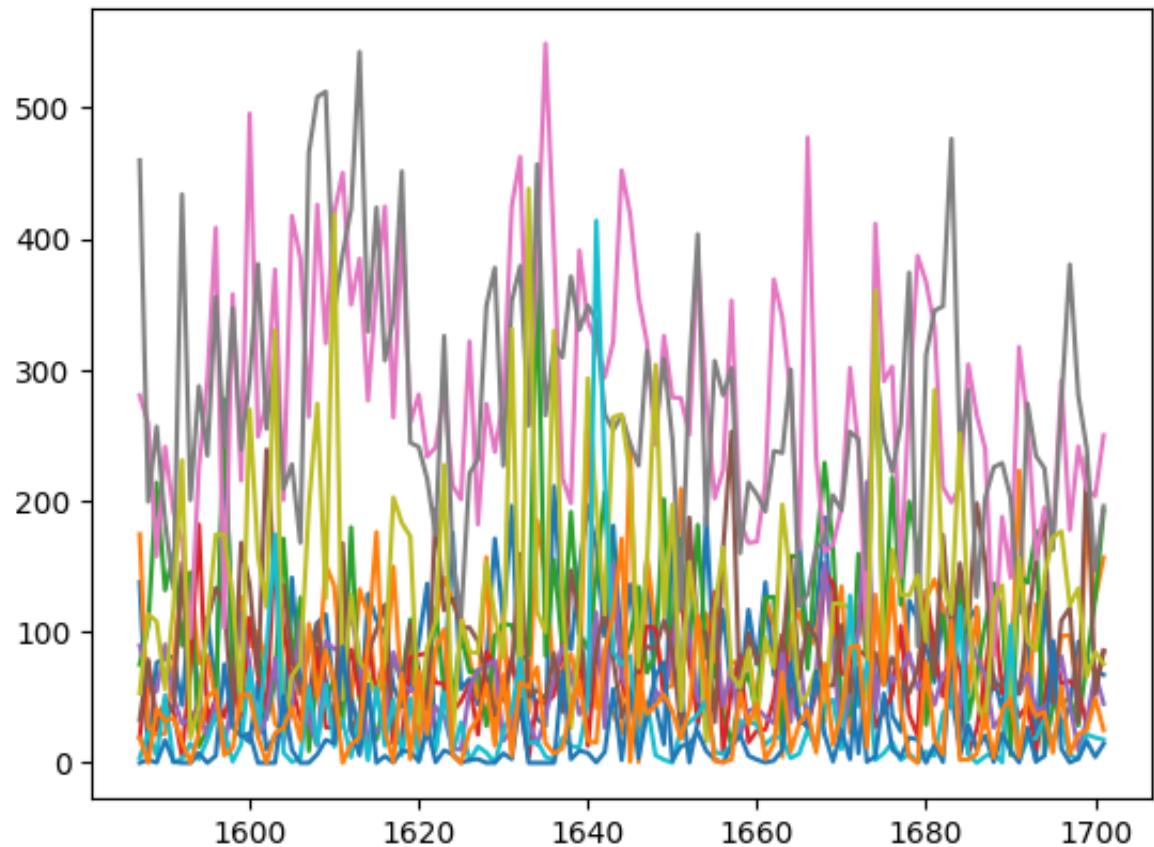
Out[230]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1587	137.8	174.5	75.0	19.2	89.6	32.7	280.5	459.7	53.0	3.9	0.0	19.1
1588	6.5	27.0	104.4	76.2	61.3	78.8	258.6	199.3	113.4	23.6	2.5	0.0
1589	76.5	21.4	213.7	25.4	54.7	32.2	157.7	256.5	107.9	5.8	0.2	41.4
1590	79.3	22.4	131.7	48.0	90.3	33.1	241.1	184.3	56.4	51.6	17.3	32.0
1591	81.3	76.8	160.2	39.3	50.4	43.6	191.1	132.8	119.1	0.3	0.9	34.4
...
1697	43.9	97.4	49.7	62.4	45.1	118.3	177.7	380.2	120.3	6.0	0.3	6.9
1698	92.3	51.3	28.4	55.9	9.4	31.1	241.5	280.6	133.1	3.1	3.2	21.8
1699	79.9	182.6	76.6	28.9	32.6	233.6	208.8	240.0	65.8	21.8	16.6	24.8
1700	69.6	124.9	125.2	60.6	68.9	51.7	203.6	146.7	84.6	19.3	4.5	49.3
1701	67.2	156.6	192.5	84.9	45.0	85.8	249.9	195.9	75.5	17.7	14.5	25.0

115 rows × 12 columns

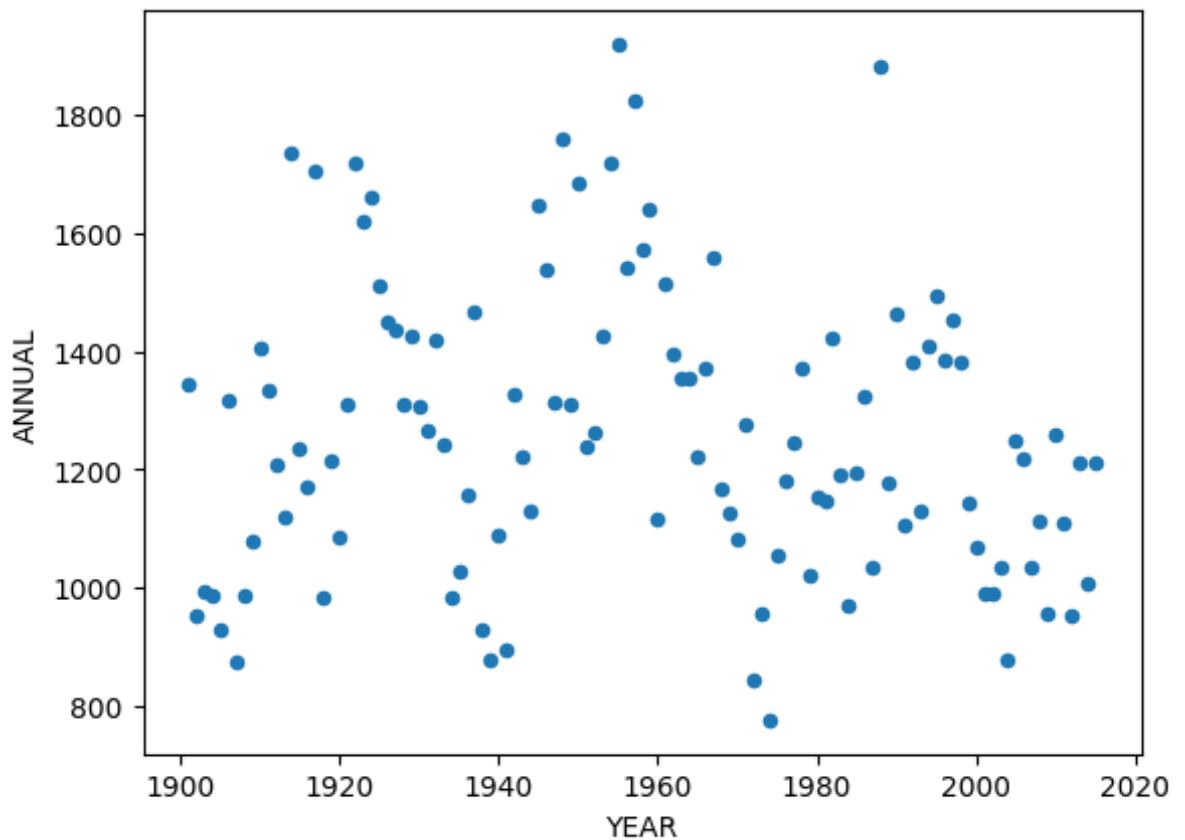
```
In [231]: plt.plot(y)
```

```
Out[231]: [
```



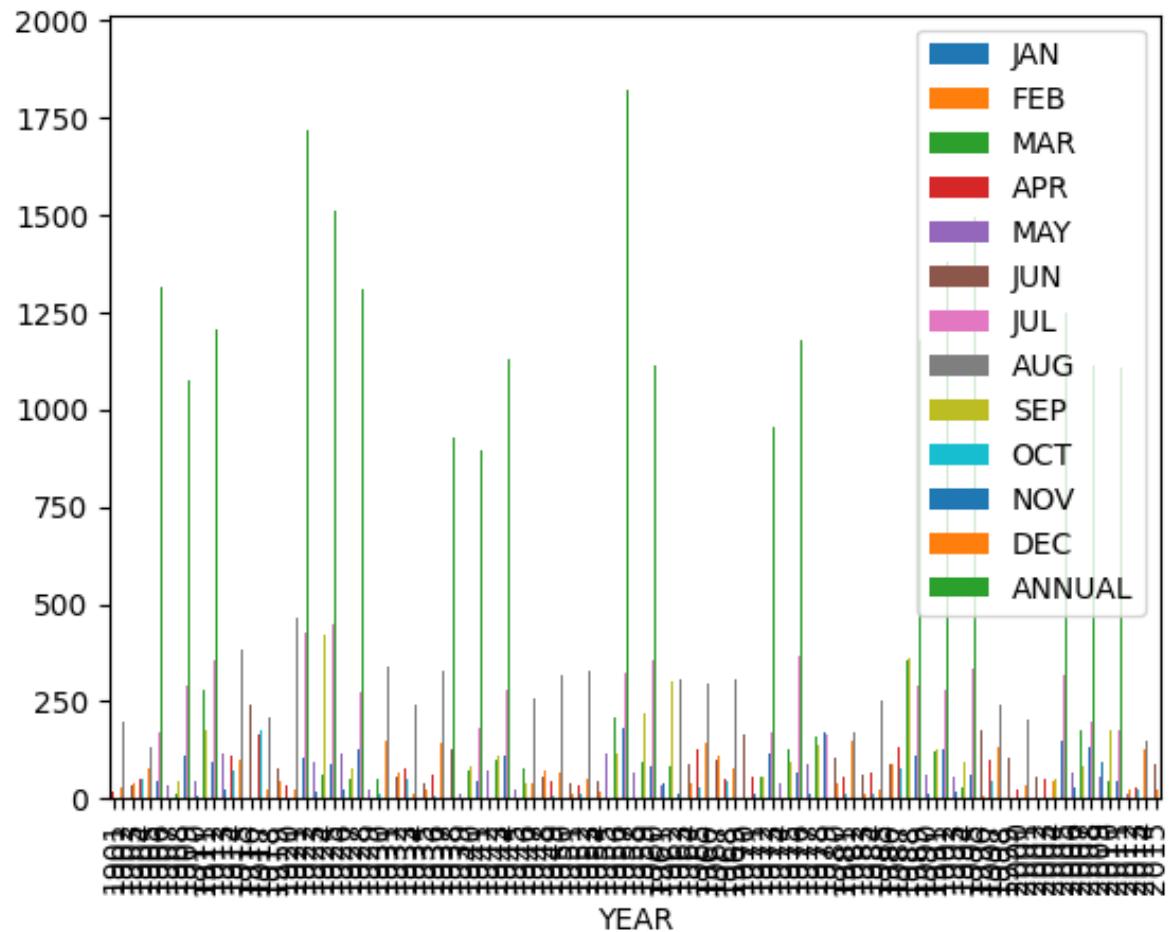
```
In [232]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

```
Out[232]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



In [233]: `x.plot.bar(x="YEAR")`

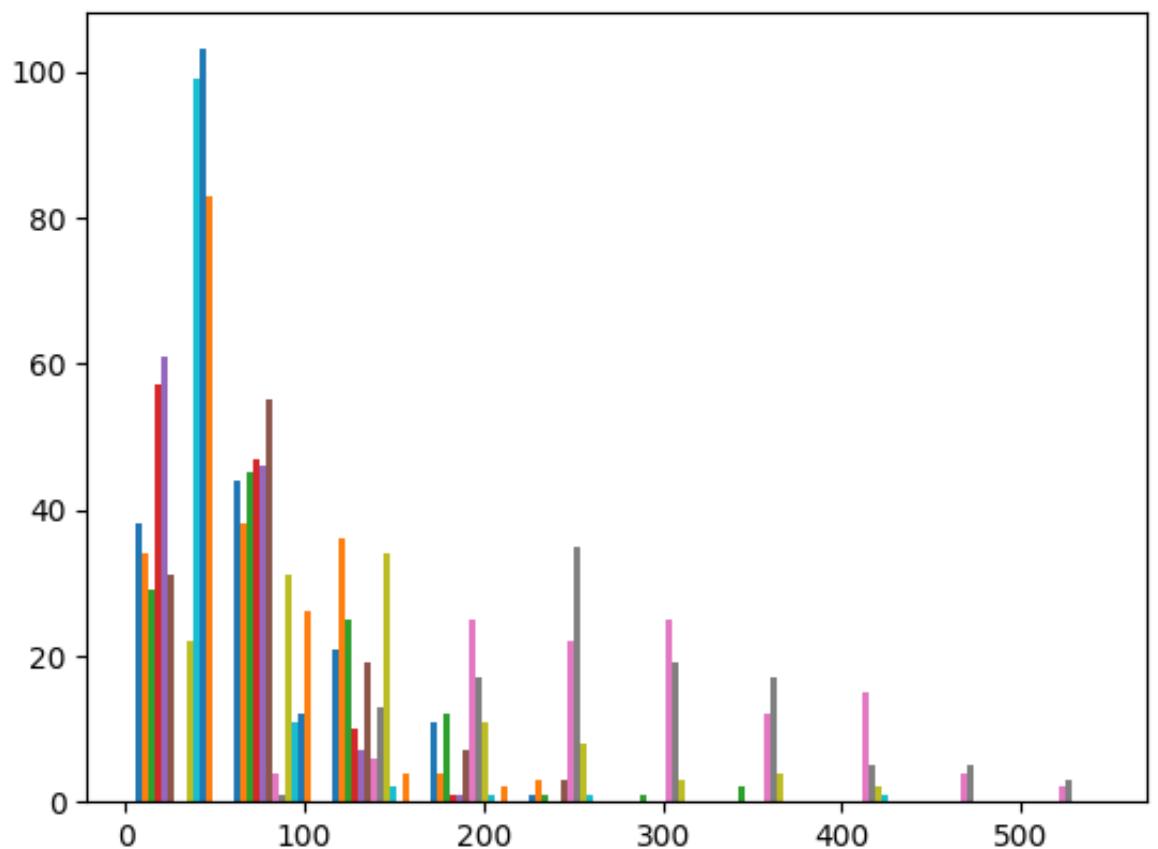
Out[233]: <Axes: xlabel='YEAR'>



In [234]: `plt.hist(y)`

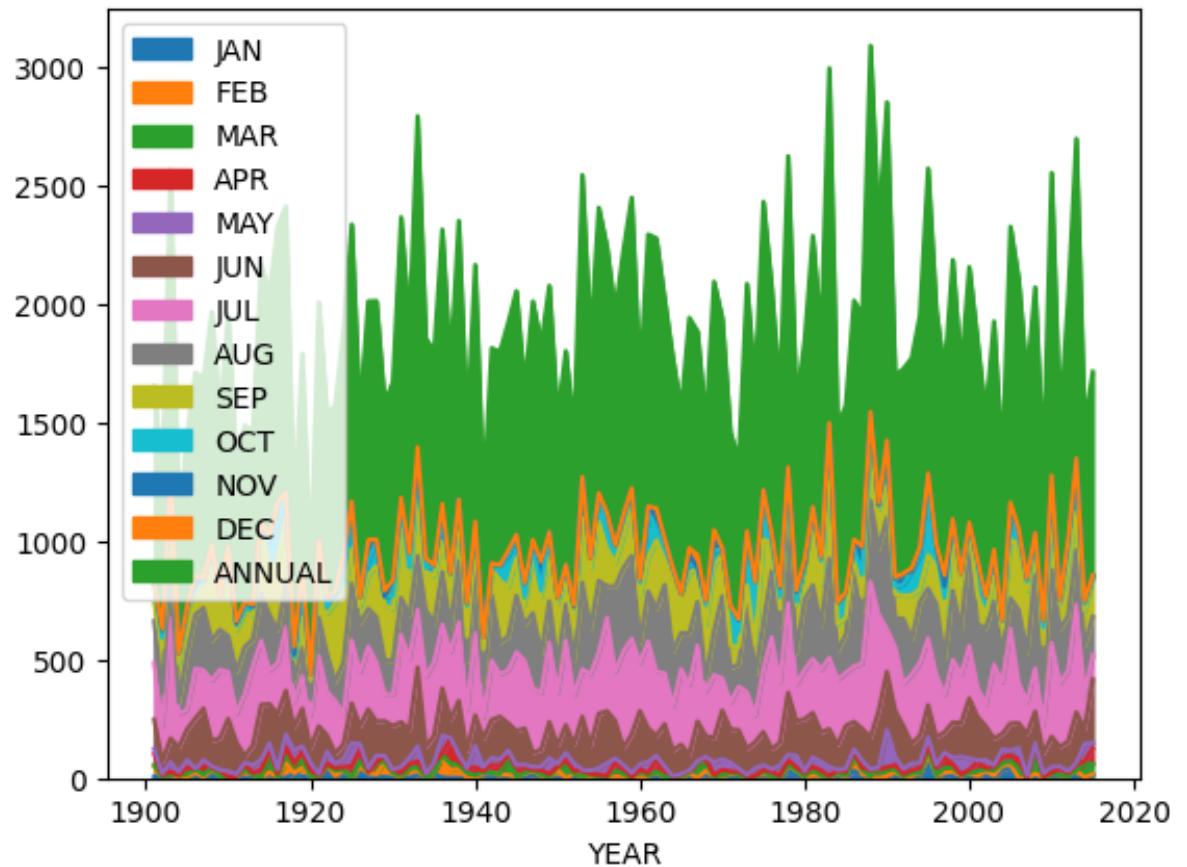
Out[234]: `(array([[38., 44., 21., 11., 1., 0., 0., 0., 0., 0., 0., 0., 0.], [34., 38., 36., 4., 3., 0., 0., 0., 0., 0., 0., 0., 0.], [29., 45., 25., 12., 1., 1., 1., 2., 0., 0., 0., 0., 0.], [57., 47., 10., 1., 0., 0., 0., 0., 0., 0., 0., 0., 0.], [61., 46., 7., 1., 0., 0., 0., 0., 0., 0., 0., 0., 0.], [31., 55., 19., 7., 3., 0., 0., 0., 0., 0., 0., 0., 0.], [0., 4., 6., 25., 22., 25., 12., 15., 4., 2., 5., 5., 5.], [0., 1., 13., 17., 35., 19., 17., 5., 5., 2., 0., 0., 0.], [22., 31., 34., 11., 8., 3., 4., 2., 0., 0., 1., 0., 0.], [99., 11., 2., 1., 1., 0., 0., 1., 0., 0., 0., 0., 0.], [0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.]]),`

```
[103., 12., 0., 0., 0., 0., 0., 0., 0.,  
0.],  
[ 83., 26., 4., 2., 0., 0., 0., 0., 0.,  
0.]),  
array([ 0. , 54.87, 109.74, 164.61, 219.48, 274.35, 329.22, 38  
4.09,  
438.96, 493.83, 548.7 ]),  
<a list of 12 BarContainer objects>)
```



In [179]: `x.plot.area(x="YEAR")`

Out[179]: <Axes: xlabel='YEAR'>



NORTH INTERIOR KARNATAKA

In [180]: `x=df[df["SUBDIVISION"]=="NORTH INTERIOR KARNATAKA"]
x`

Out[180]:

		index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
		3657	3657	NORTH INTERIOR KARNATAKA	1901	3.5	18.8	7.1	67.2	65.5	120.5	151.9	115.1	128.8
		3658	3658	NORTH INTERIOR KARNATAKA	1902	0.0	0.0	0.3	22.5	34.4	111.3	83.2	78.1	146.7
		3659	3659	NORTH INTERIOR KARNATAKA	1903	3.5	0.0	0.1	6.9	53.4	102.8	209.4	146.4	189.3
		3660	3660	NORTH INTERIOR KARNATAKA	1904	0.2	0.3	8.5	11.0	46.3	120.6	91.6	48.5	165.1
		3661	3661	NORTH INTERIOR KARNATAKA	1905	0.0	6.0	2.6	16.0	51.2	99.6	60.1	139.2	42.2
		
		3767	3767	NORTH INTERIOR KARNATAKA	2011	0.5	7.2	7.2	41.2	46.8	101.3	150.8	152.0	69.0
		3768	3768	NORTH INTERIOR KARNATAKA	2012	28.5	6.2	0.4	35.4	19.5	60.0	114.5	105.5	79.2
		3769	3769	NORTH INTERIOR KARNATAKA	2013	1.2	6.1	3.0	25.4	47.4	99.4	160.7	73.9	201.0
		3770	3770	NORTH INTERIOR KARNATAKA	2014	0.0	6.1	29.2	26.4	93.0	50.4	136.8	205.2	90.2
		3771	3771	NORTH INTERIOR KARNATAKA	2015	2.4	0.0	27.5	50.8	45.3	89.6	38.5	78.4	150.8

115 rows × 20 columns

In [181]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out[181]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	A
3657	1901	3.5	18.8	7.1	67.2	65.5	120.5	151.9	115.1	128.8	80.0	13.6	0.9	
3658	1902	0.0	0.0	0.3	22.5	34.4	111.3	83.2	78.1	146.7	118.8	35.7	85.1	
3659	1903	3.5	0.0	0.1	6.9	53.4	102.8	209.4	146.4	189.3	166.4	34.3	16.0	
3660	1904	0.2	0.3	8.5	11.0	46.3	120.6	91.6	48.5	165.1	86.5	0.0	0.0	
3661	1905	0.0	6.0	2.6	16.0	51.2	99.6	60.1	139.2	42.2	85.0	4.4	0.0	
...	
3767	2011	0.5	7.2	7.2	41.2	46.8	101.3	150.8	152.0	69.0	73.4	5.7	0.0	
3768	2012	28.5	6.2	0.4	35.4	19.5	60.0	114.5	105.5	79.2	85.2	46.5	2.9	
3769	2013	1.2	6.1	3.0	25.4	47.4	99.4	160.7	73.9	201.0	101.0	4.2	0.1	
3770	2014	0.0	6.1	29.2	26.4	93.0	50.4	136.8	205.2	90.2	80.3	25.0	14.1	
3771	2015	2.4	0.0	27.5	50.8	45.3	89.6	38.5	78.4	150.8	61.2	5.7	1.7	

115 rows × 14 columns

In [182]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

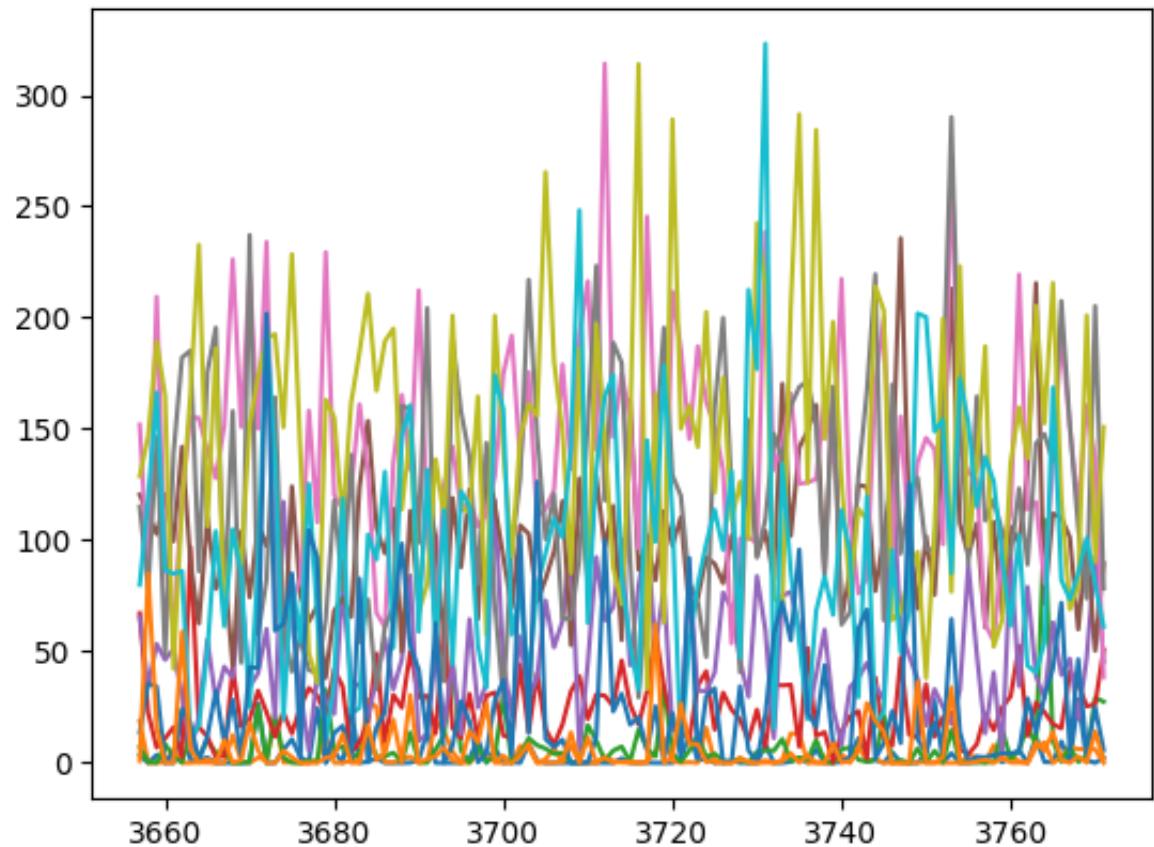
Out[182]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
3657	3.5	18.8	7.1	67.2	65.5	120.5	151.9	115.1	128.8	80.0	13.6	0.9	
3658	0.0	0.0	0.3	22.5	34.4	111.3	83.2	78.1	146.7	118.8	35.7	85.1	
3659	3.5	0.0	0.1	6.9	53.4	102.8	209.4	146.4	189.3	166.4	34.3	16.0	
3660	0.2	0.3	8.5	11.0	46.3	120.6	91.6	48.5	165.1	86.5	0.0	0.0	
3661	0.0	6.0	2.6	16.0	51.2	99.6	60.1	139.2	42.2	85.0	4.4	0.0	
...	
3767	0.5	7.2	7.2	41.2	46.8	101.3	150.8	152.0	69.0	73.4	5.7	0.0	
3768	28.5	6.2	0.4	35.4	19.5	60.0	114.5	105.5	79.2	85.2	46.5	2.9	
3769	1.2	6.1	3.0	25.4	47.4	99.4	160.7	73.9	201.0	101.0	4.2	0.1	
3770	0.0	6.1	29.2	26.4	93.0	50.4	136.8	205.2	90.2	80.3	25.0	14.1	
3771	2.4	0.0	27.5	50.8	45.3	89.6	38.5	78.4	150.8	61.2	5.7	1.7	

115 rows × 12 columns

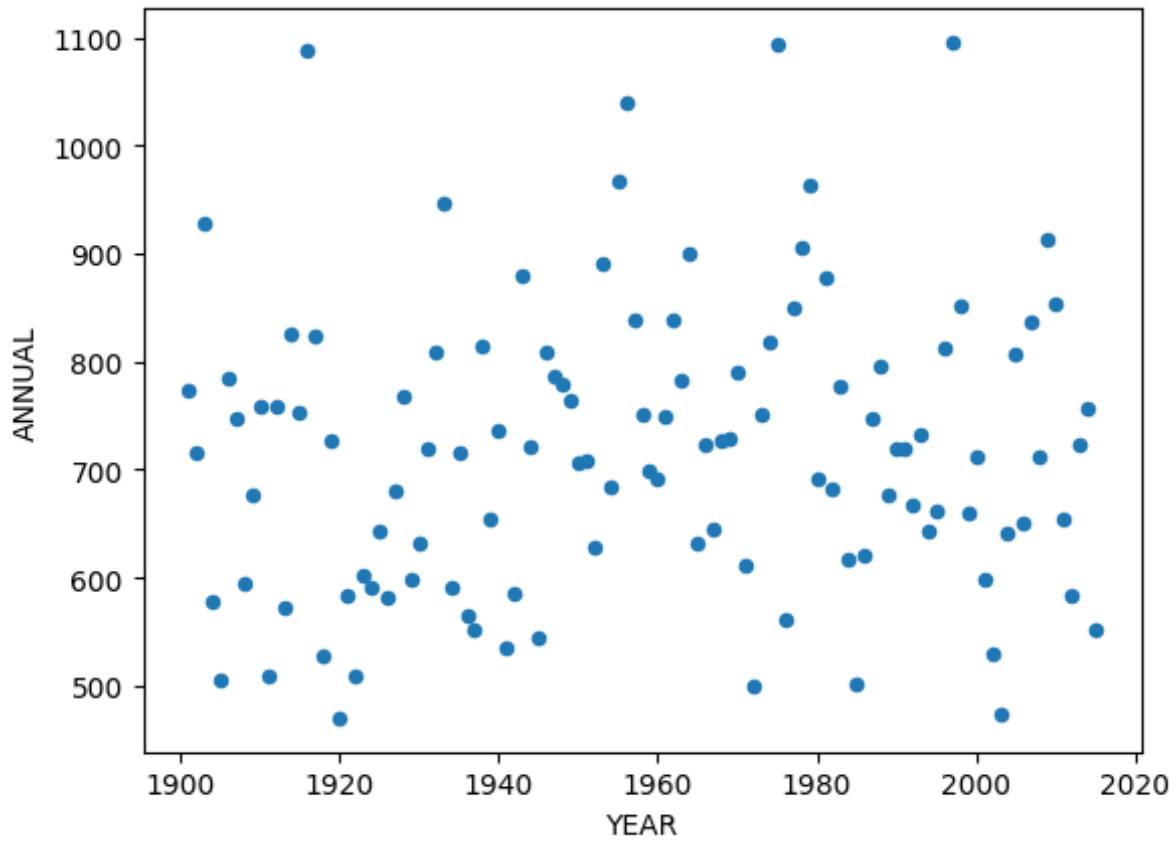
```
In [183]: plt.plot(y)
```

```
Out[183]: [<matplotlib.lines.Line2D at 0x26d84ed1550>,
 <matplotlib.lines.Line2D at 0x26ddd3af890>,
 <matplotlib.lines.Line2D at 0x26defe19e90>,
 <matplotlib.lines.Line2D at 0x26def4157d0>,
 <matplotlib.lines.Line2D at 0x26df1a881d0>,
 <matplotlib.lines.Line2D at 0x26df1a89210>,
 <matplotlib.lines.Line2D at 0x26de4239b50>,
 <matplotlib.lines.Line2D at 0x26de423bf90>,
 <matplotlib.lines.Line2D at 0x26df1a88b90>,
 <matplotlib.lines.Line2D at 0x26df1a8bf10>,
 <matplotlib.lines.Line2D at 0x26de4232210>,
 <matplotlib.lines.Line2D at 0x26de40e8890>]
```



```
In [184]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

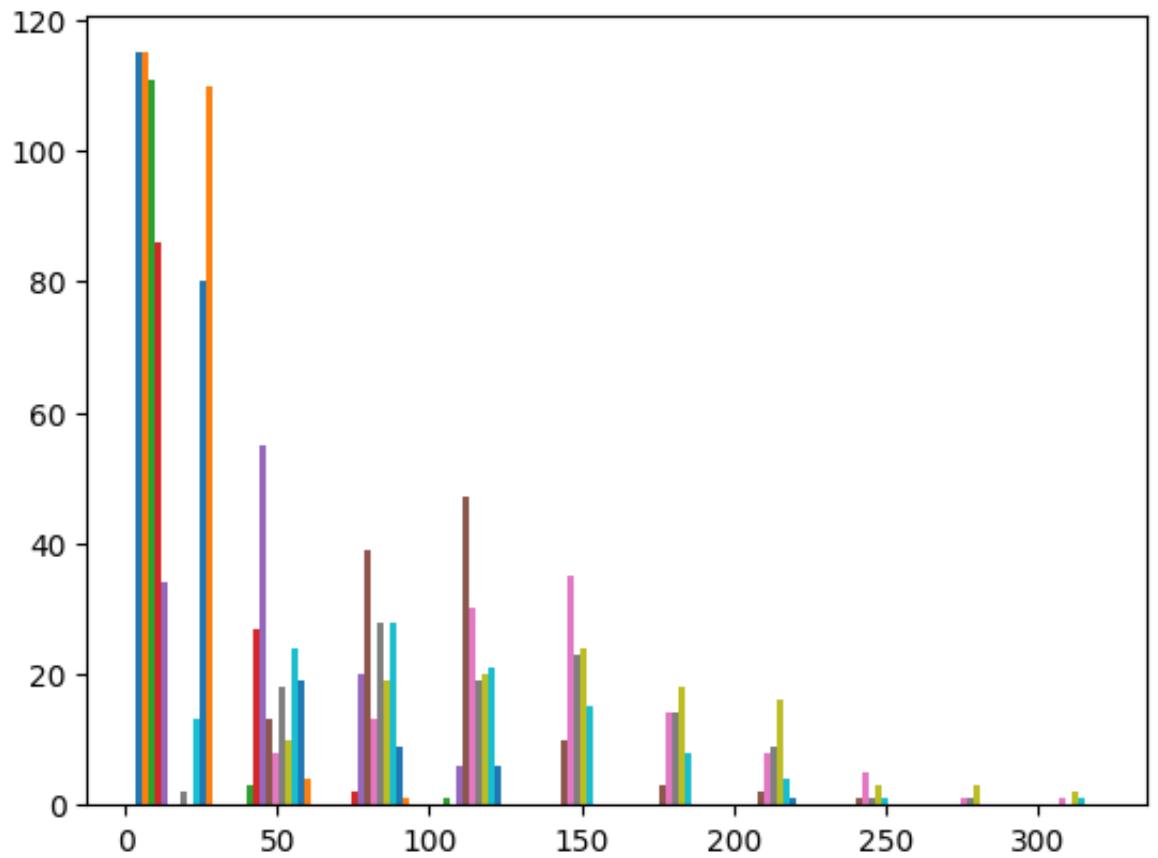
```
Out[184]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [185]: plt.hist(y)
```

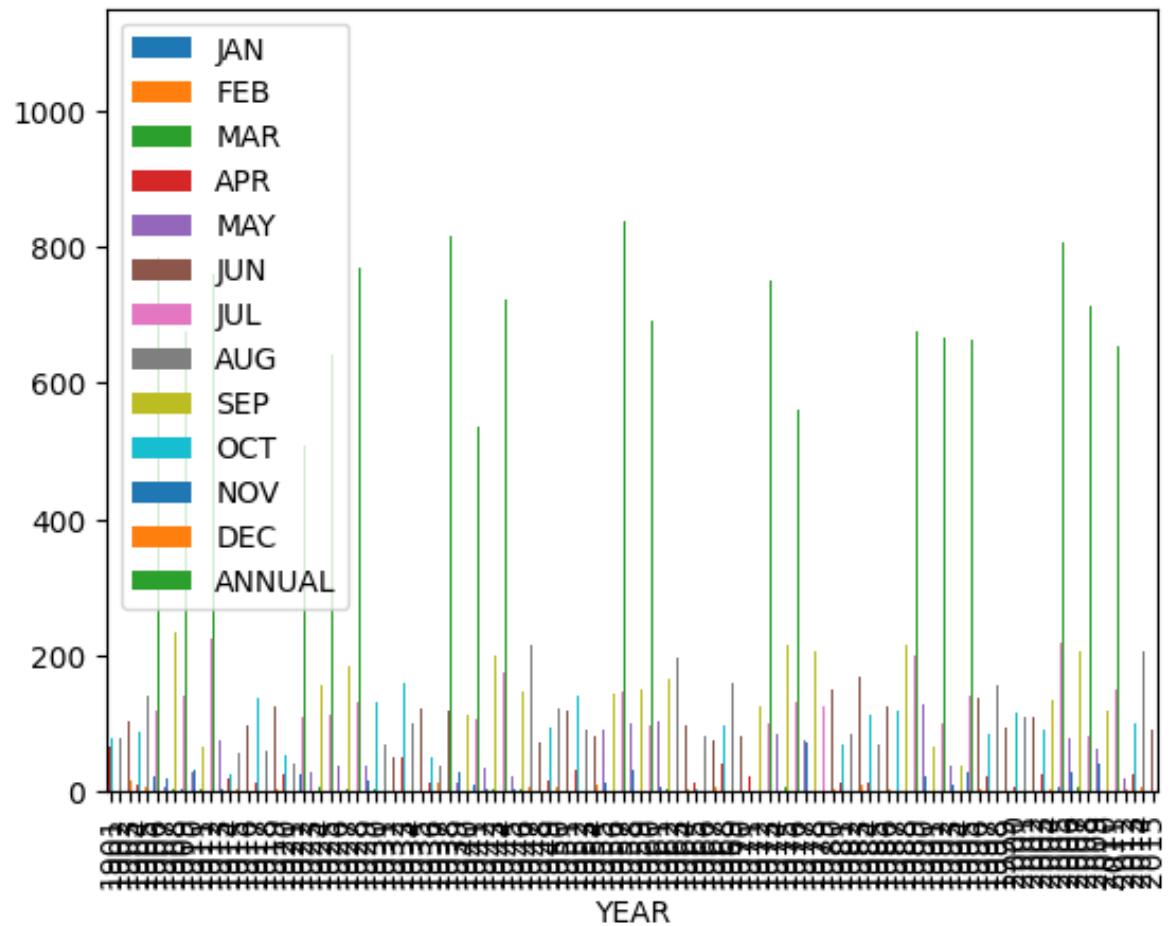
```
Out[185]: (array([[115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [111., 3., 0., 1., 0., 0., 0., 0., 0., 0.,
       0.],
      [ 86., 27., 2., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [ 34., 55., 20., 6., 0., 0., 0., 0., 0., 0.,
       0.],
      [  0., 13., 39., 47., 10., 3., 2., 1., 0.,
       0.],
      [  0., 8., 13., 30., 35., 14., 8., 5., 1.,
       1.],
      [  2., 18., 28., 19., 23., 14., 9., 1., 1.,
       0.],
      [  0., 10., 19., 20., 24., 18., 16., 3., 3.,
       2.],
      [ 13., 24., 28., 21., 15., 8., 4., 1., 0.,
       1.],
      [ 80., 19., 9., 6., 0., 0., 1., 0., 0.,
       0.],
      [110, 1, 1, 0, 0, 0, 0, 0, 0, 0,
       0]]),
```

```
    1110., 111., 111., 111., 111., 111., 111., 111.,  
0.]],  
array([ 0. , 32.31, 64.62, 96.93, 129.24, 161.55, 193.86, 22  
6.17,  
258.48, 290.79, 323.1 ]),  
<a list of 12 BarContainer objects>)
```



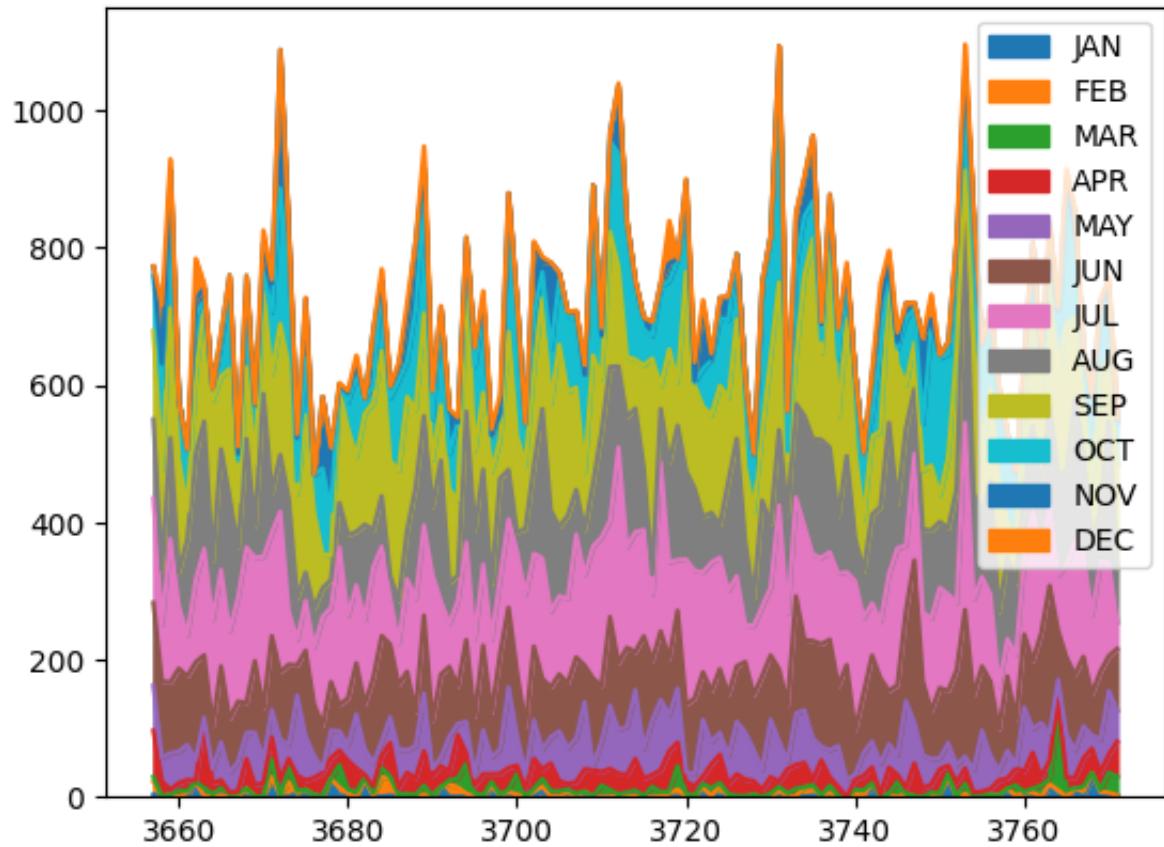
In [186]: `x.plot.bar(x="YEAR")`

Out[186]: <Axes: xlabel='YEAR'>



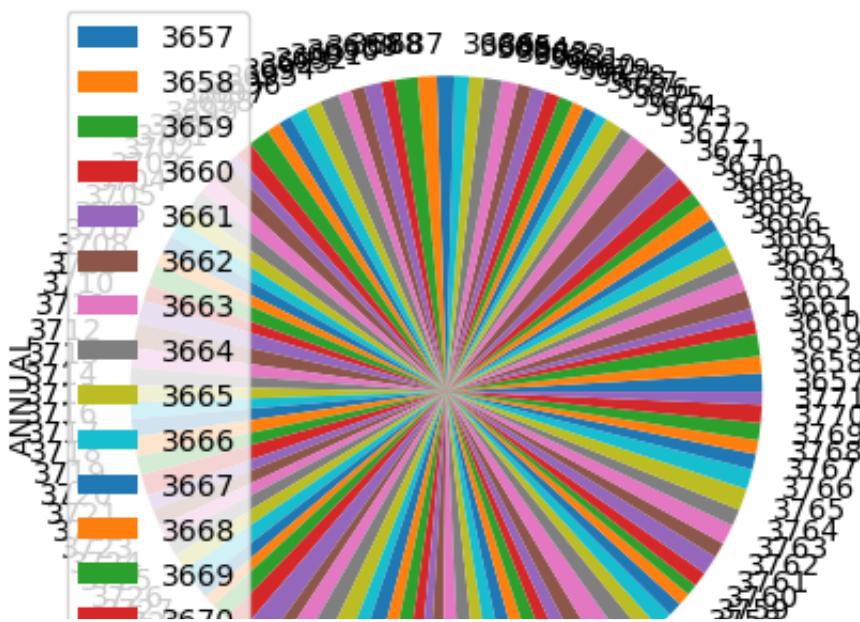
```
In [187]: y.plot.area()
```

```
Out[187]: <Axes: >
```



```
In [193]: x.plot.pie(y="ANNUAL", subplots=True)
```

```
Out[193]: array([<Axes: ylabel='ANNUAL'>], dtype=object)
```



PUNJAB

```
In [235]: x=df[df["SUBDIVISION"]=="PUNJAB"]  
x
```

Out[235]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1472	1472	PUNJAB	1901	55.7	50.1	25.2	2.1	25.2	10.4	178.2	145.0	24.4
1473	1473	PUNJAB	1902	0.0	0.8	9.9	10.9	29.6	49.9	125.6	94.9	67.2
1474	1474	PUNJAB	1903	29.5	0.5	45.0	1.3	9.2	5.2	212.2	119.1	132.5
1475	1475	PUNJAB	1904	24.2	1.7	87.8	1.2	13.8	22.0	59.9	124.0	73.8
1476	1476	PUNJAB	1905	53.0	40.3	24.3	0.5	2.2	19.2	122.6	50.3	111.1
...
1582	1582	PUNJAB	2011	3.5	35.6	8.2	17.8	18.9	162.9	120.9	193.5	140.2
1583	1583	PUNJAB	2012	62.6	3.2	1.9	31.1	1.6	11.9	120.2	135.1	112.3
1584	1584	PUNJAB	2013	9.3	50.1	11.6	3.4	3.6	120.3	117.9	217.1	24.4
1585	1585	PUNJAB	2014	21.8	20.1	30.3	24.5	20.8	20.6	76.3	41.9	105.8
1586	1586	PUNJAB	2015	17.7	31.3	68.5	29.8	16.7	48.3	130.2	88.6	69.2

115 rows × 20 columns

In [236]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out[236]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
1472	1901	55.7	50.1	25.2	2.1	25.2	10.4	178.2	145.0	24.4	3.7	0.0	3.3	300.3
1473	1902	0.0	0.8	9.9	10.9	29.6	49.9	125.6	94.9	67.2	9.0	0.0	0.1	200.4
1474	1903	29.5	0.5	45.0	1.3	9.2	5.2	212.2	119.1	132.5	6.9	0.0	9.5	300.1
1475	1904	24.2	1.7	87.8	1.2	13.8	22.0	59.9	124.0	73.8	7.4	9.8	25.9	300.0
1476	1905	53.0	40.3	24.3	0.5	2.2	19.2	122.6	50.3	111.1	1.2	0.0	9.4	300.0
...
1582	2011	3.5	35.6	8.2	17.8	18.9	162.9	120.9	193.5	140.2	0.0	1.0	2.6	300.0
1583	2012	62.6	3.2	1.9	31.1	1.6	11.9	120.2	135.1	112.3	2.2	0.4	11.0	300.0
1584	2013	9.3	50.1	11.6	3.4	3.6	120.3	117.9	217.1	24.4	16.2	6.1	6.6	300.0
1585	2014	21.8	20.1	30.3	24.5	20.8	20.6	76.3	41.9	105.8	6.0	0.7	14.1	300.0
1586	2015	17.7	31.3	68.5	29.8	16.7	48.3	130.2	88.6	69.2	9.0	0.8	0.7	300.0

115 rows × 14 columns

In [237]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

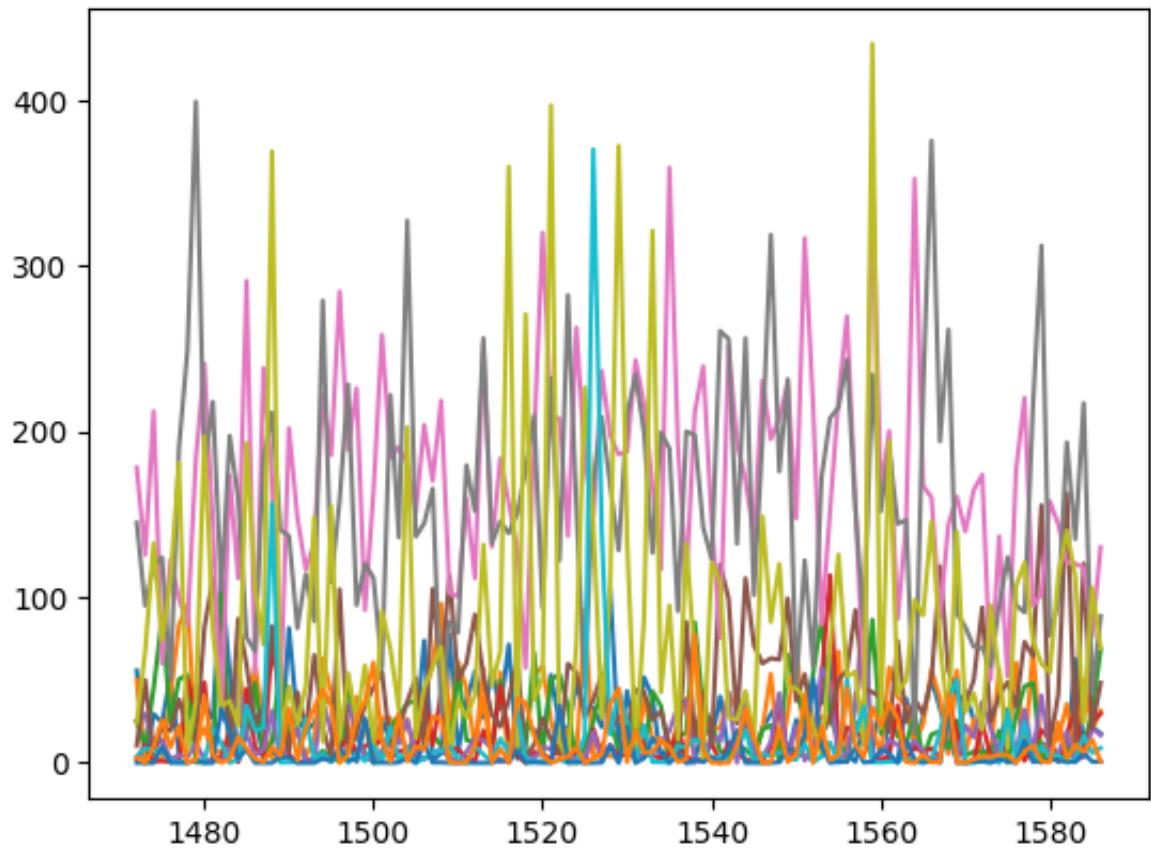
Out[237]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1472	55.7	50.1	25.2	2.1	25.2	10.4	178.2	145.0	24.4	3.7	0.0	3.3
1473	0.0	0.8	9.9	10.9	29.6	49.9	125.6	94.9	67.2	9.0	0.0	0.1
1474	29.5	0.5	45.0	1.3	9.2	5.2	212.2	119.1	132.5	6.9	0.0	9.5
1475	24.2	1.7	87.8	1.2	13.8	22.0	59.9	124.0	73.8	7.4	9.8	25.9
1476	53.0	40.3	24.3	0.5	2.2	19.2	122.6	50.3	111.1	1.2	0.0	9.4
...
1582	3.5	35.6	8.2	17.8	18.9	162.9	120.9	193.5	140.2	0.0	1.0	2.6
1583	62.6	3.2	1.9	31.1	1.6	11.9	120.2	135.1	112.3	2.2	0.4	11.0
1584	9.3	50.1	11.6	3.4	3.6	120.3	117.9	217.1	24.4	16.2	6.1	6.6
1585	21.8	20.1	30.3	24.5	20.8	20.6	76.3	41.9	105.8	6.0	0.7	14.1
1586	17.7	31.3	68.5	29.8	16.7	48.3	130.2	88.6	69.2	9.0	0.8	0.7

115 rows × 12 columns

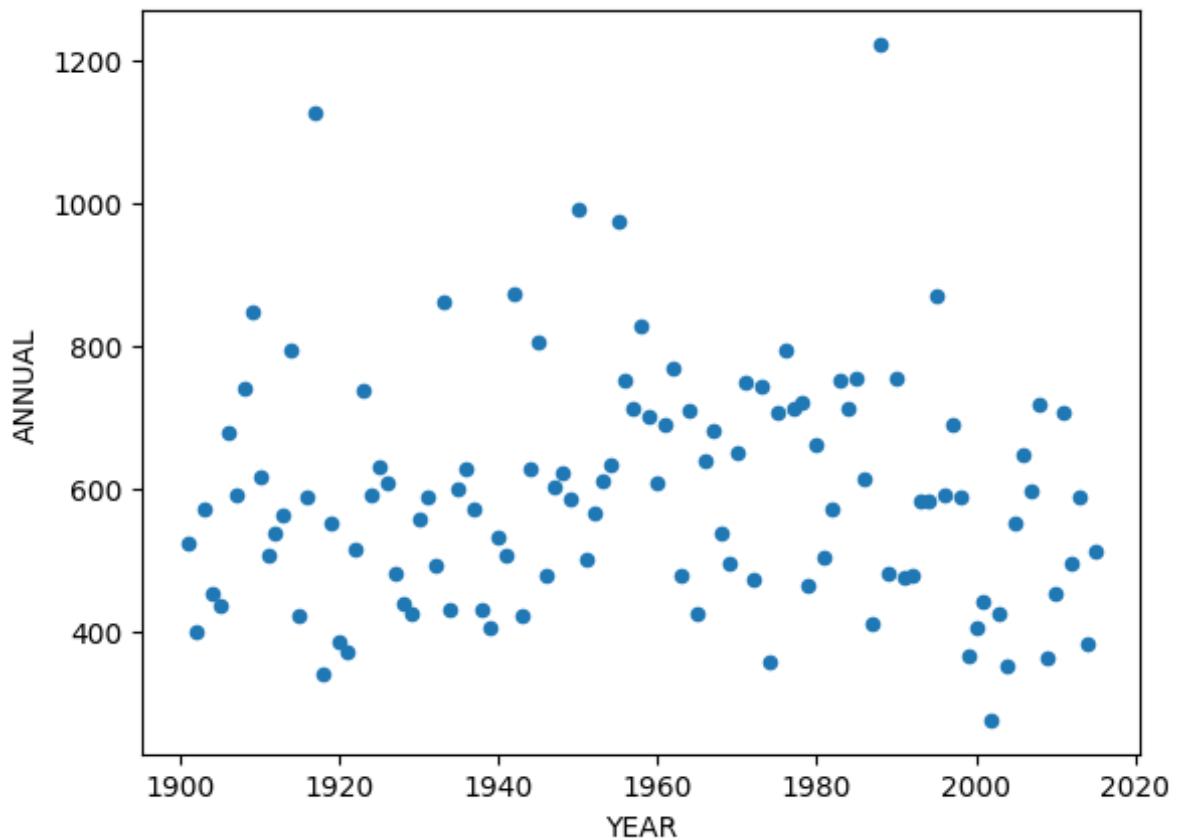
```
In [238]: plt.plot(y)
```

```
Out[238]: [
```



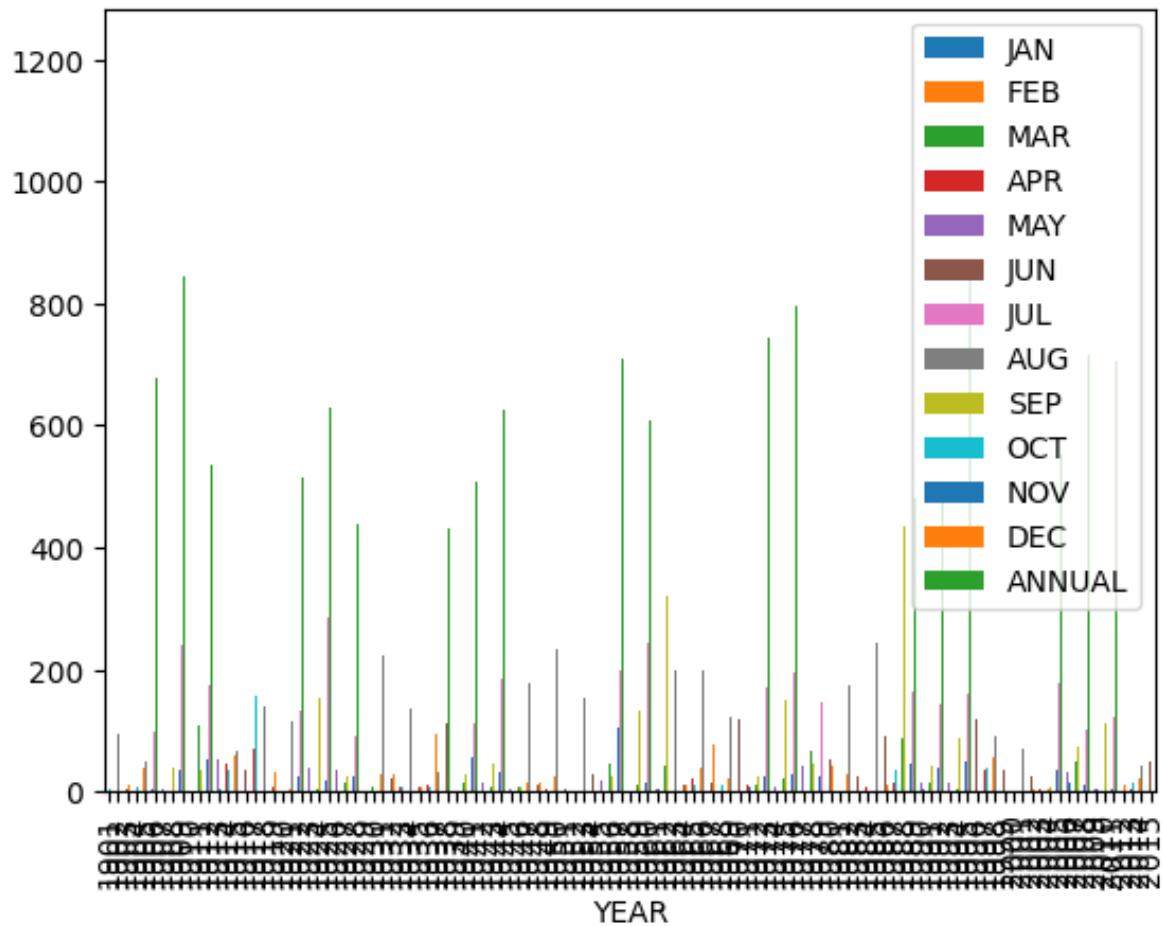
```
In [239]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

```
Out[239]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



In [240]: `x.plot.bar(x="YEAR")`

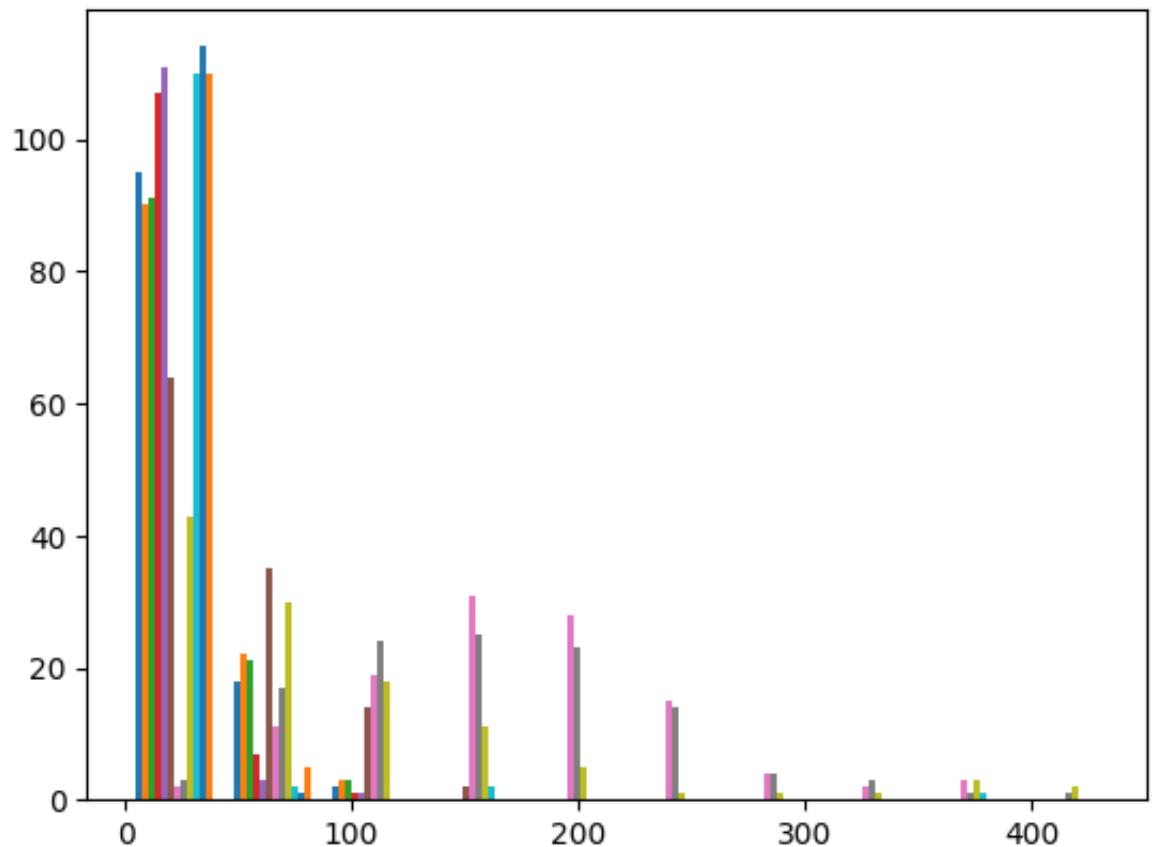
Out[240]: <Axes: xlabel='YEAR'>



In [241]: `plt.hist(y)`

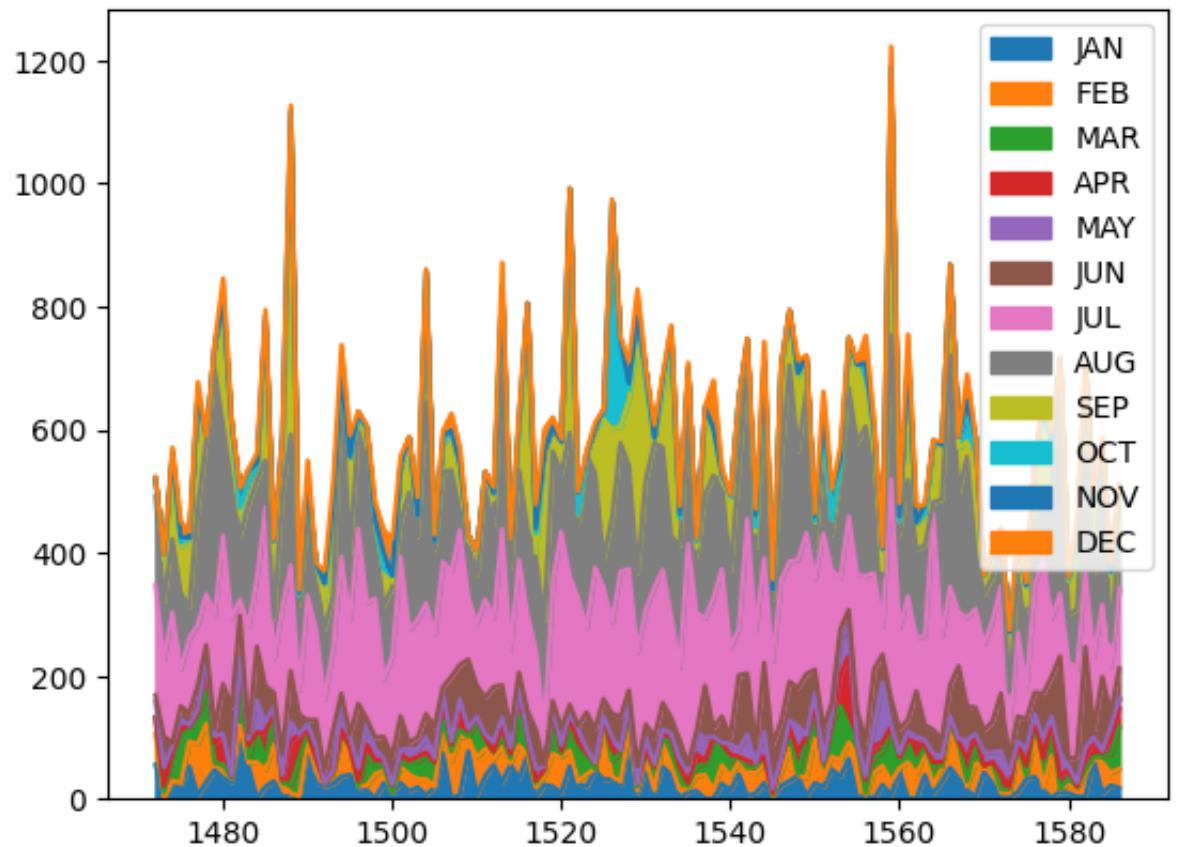
Out[241]: `(array([[95., 18., 2., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.], [90., 22., 3., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.], [91., 21., 3., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.], [107., 7., 1., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.], [111., 3., 1., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.], [64., 35., 14., 2., 0., 0., 0., 0., 0., 0., 0., 0., 0.], [2., 11., 19., 31., 28., 15., 4., 2., 3., 0., 0., 0., 0.], [3., 17., 24., 25., 23., 14., 4., 3., 1., 0., 0., 0., 0.], [43., 30., 18., 11., 5., 1., 1., 1., 1., 0., 0., 0., 0.], [110., 2., 0., 2., 0., 0., 0., 0., 0., 0., 0., 0., 0.], [0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.]]),`

```
[114., 1., 0., 0., 0., 0., 0., 0., 0.,  
0.],  
[110., 5., 0., 0., 0., 0., 0., 0., 0.,  
0.]),  
array([ 0. , 43.41, 86.82, 130.23, 173.64, 217.05, 260.46, 30  
3.87,  
347.28, 390.69, 434.1 ]),  
<a list of 12 BarContainer objects>)
```



In [242]: `y.plot.area()`

Out[242]: <Axes: >



In [243]: `x=df[df["SUBDIVISION"]=="HARYANA DELHI & CHANDIGARH"]
x`

Out[243]:

		index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	
		1357	1357	HARYANA DELHI & CHANDIGARH	1901	35.4	28.9	11.1	0.0	5.1	13.2	126.4	151.5	10.5
		1358	1358	HARYANA DELHI & CHANDIGARH	1902	0.0	0.7	2.9	10.2	15.8	74.6	149.3	97.1	59.8
		1359	1359	HARYANA DELHI & CHANDIGARH	1903	14.7	0.5	2.3	0.5	8.5	8.6	151.6	138.2	97.7
		1360	1360	HARYANA DELHI & CHANDIGARH	1904	7.6	0.7	48.0	0.5	29.3	34.3	109.7	162.9	102.3
		1361	1361	HARYANA DELHI & CHANDIGARH	1905	44.8	20.8	14.0	1.3	7.4	20.1	93.6	23.1	92.6
		
		1467	1467	HARYANA DELHI & CHANDIGARH	2011	0.7	26.7	6.9	8.9	28.7	94.4	85.0	127.3	133.1
		1468	1468	HARYANA DELHI & CHANDIGARH	2012	8.2	0.2	0.1	11.8	3.8	5.3	68.1	196.6	90.7
		1469	1469	HARYANA DELHI & CHANDIGARH	2013	21.1	52.2	5.3	3.3	1.4	62.1	96.5	161.9	42.8
		1470	1470	HARYANA DELHI & CHANDIGARH	2014	13.0	17.3	26.8	7.5	20.3	25.9	72.3	34.8	67.3
		1471	1471	HARYANA DELHI & CHANDIGARH	2015	12.4	6.6	71.8	34.8	8.4	43.7	130.3	89.2	32.1

115 rows × 20 columns

In [244]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out[244]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	AN
1357	1901	35.4	28.9	11.1	0.0	5.1	13.2	126.4	151.5	10.5	2.0	0.0	6.1	
1358	1902	0.0	0.7	2.9	10.2	15.8	74.6	149.3	97.1	59.8	9.3	0.0	0.0	
1359	1903	14.7	0.5	2.3	0.5	8.5	8.6	151.6	138.2	97.7	4.0	0.0	2.3	
1360	1904	7.6	0.7	48.0	0.5	29.3	34.3	109.7	162.9	102.3	1.5	10.4	20.3	
1361	1905	44.8	20.8	14.0	1.3	7.4	20.1	93.6	23.1	92.6	0.0	0.0	5.1	
...	
1467	2011	0.7	26.7	6.9	8.9	28.7	94.4	85.0	127.3	133.1	0.0	0.0	0.4	
1468	2012	8.2	0.2	0.1	11.8	3.8	5.3	68.1	196.6	90.7	2.4	0.6	3.5	
1469	2013	21.1	52.2	5.3	3.3	1.4	62.1	96.5	161.9	42.8	10.9	1.7	2.1	
1470	2014	13.0	17.3	26.8	7.5	20.3	25.9	72.3	34.8	67.3	10.5	0.2	9.6	
1471	2015	12.4	6.6	71.8	34.8	8.4	43.7	130.3	89.2	32.1	3.7	2.3	0.2	

115 rows × 14 columns

In [245]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

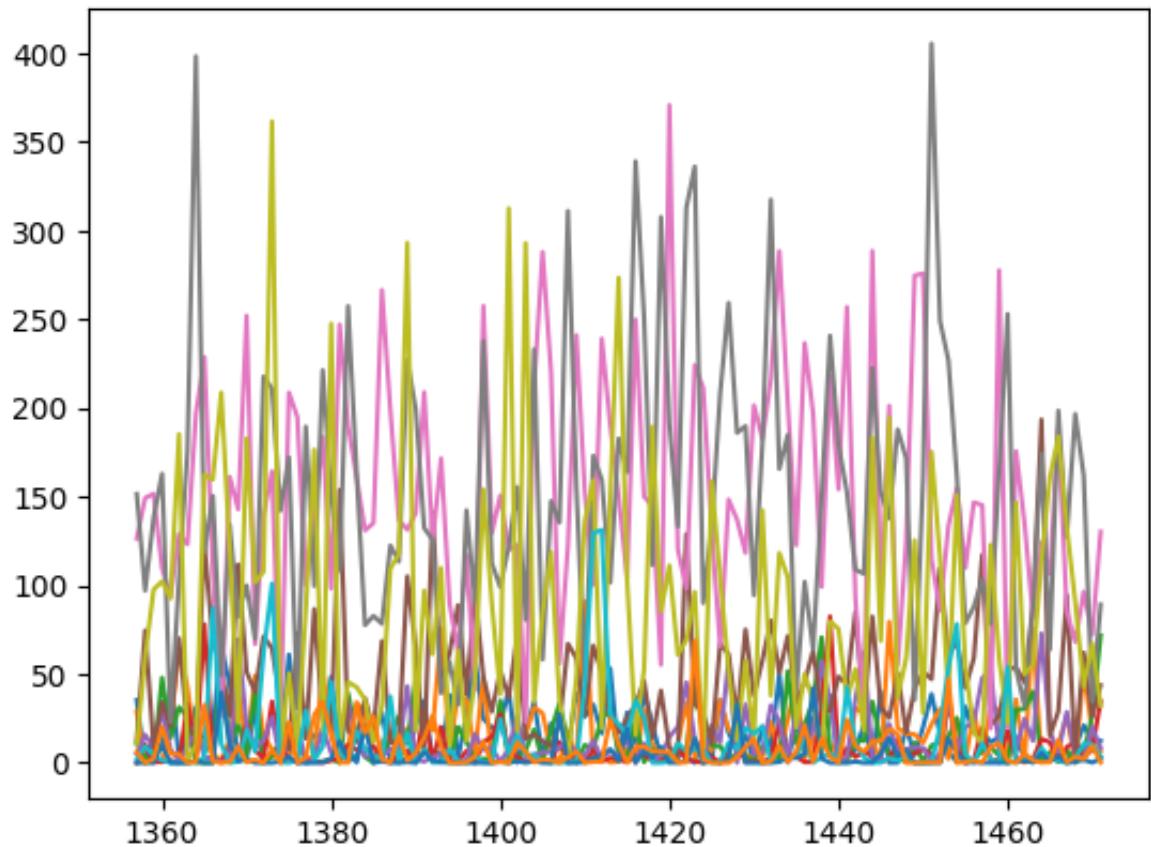
Out[245]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1357	35.4	28.9	11.1	0.0	5.1	13.2	126.4	151.5	10.5	2.0	0.0	6.1
1358	0.0	0.7	2.9	10.2	15.8	74.6	149.3	97.1	59.8	9.3	0.0	0.0
1359	14.7	0.5	2.3	0.5	8.5	8.6	151.6	138.2	97.7	4.0	0.0	2.3
1360	7.6	0.7	48.0	0.5	29.3	34.3	109.7	162.9	102.3	1.5	10.4	20.3
1361	44.8	20.8	14.0	1.3	7.4	20.1	93.6	23.1	92.6	0.0	0.0	5.1
...
1467	0.7	26.7	6.9	8.9	28.7	94.4	85.0	127.3	133.1	0.0	0.0	0.4
1468	8.2	0.2	0.1	11.8	3.8	5.3	68.1	196.6	90.7	2.4	0.6	3.5
1469	21.1	52.2	5.3	3.3	1.4	62.1	96.5	161.9	42.8	10.9	1.7	2.1
1470	13.0	17.3	26.8	7.5	20.3	25.9	72.3	34.8	67.3	10.5	0.2	9.6
1471	12.4	6.6	71.8	34.8	8.4	43.7	130.3	89.2	32.1	3.7	2.3	0.2

115 rows × 12 columns

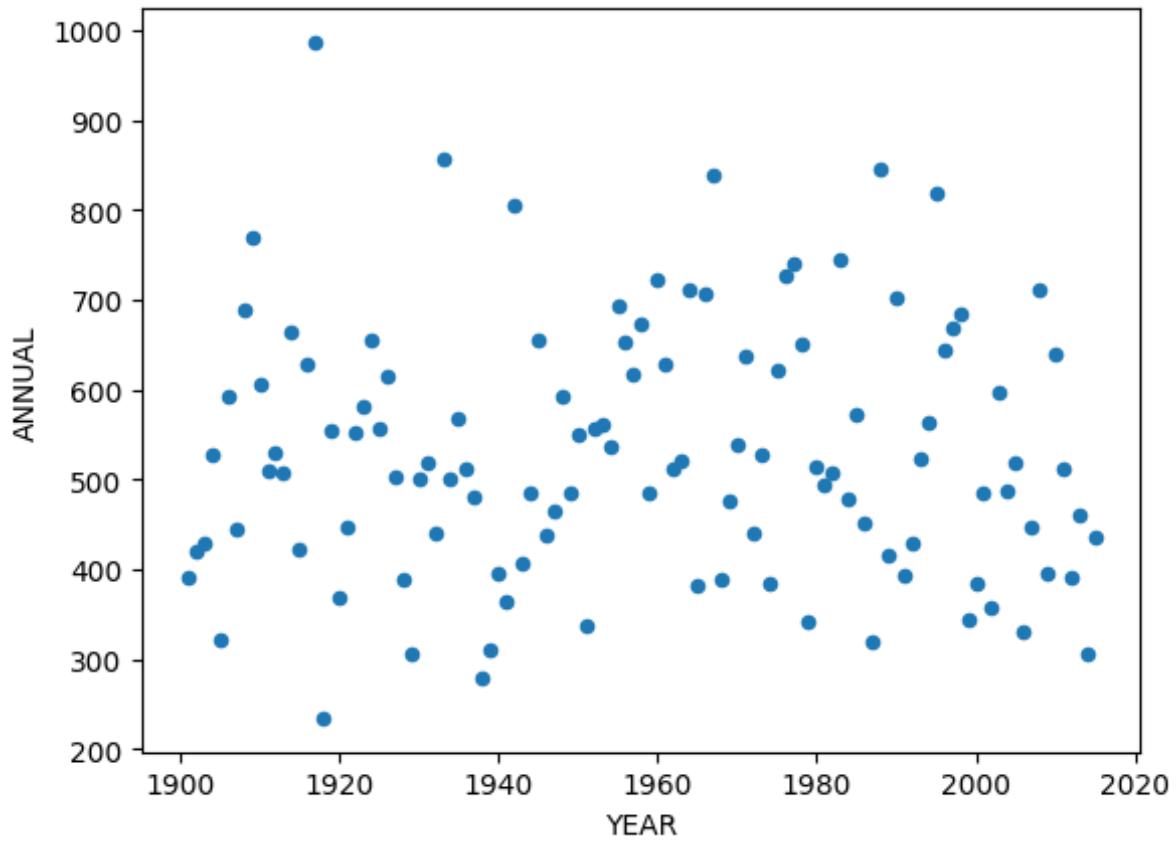
```
In [246]: plt.plot(y)
```

```
Out[246]: [<matplotlib.lines.Line2D at 0x26d9b2e8b50>,
 <matplotlib.lines.Line2D at 0x26d9b3321d0>,
 <matplotlib.lines.Line2D at 0x26d9b332510>,
 <matplotlib.lines.Line2D at 0x26d9b332890>,
 <matplotlib.lines.Line2D at 0x26d9b332bd0>,
 <matplotlib.lines.Line2D at 0x26d9b332f90>,
 <matplotlib.lines.Line2D at 0x26d9b332c50>,
 <matplotlib.lines.Line2D at 0x26d9b333790>,
 <matplotlib.lines.Line2D at 0x26d9b332cd0>,
 <matplotlib.lines.Line2D at 0x26d9b333110>,
 <matplotlib.lines.Line2D at 0x26d9b344250>,
 <matplotlib.lines.Line2D at 0x26d9b344750>]
```



```
In [247]: x.plot.scatter(x="YEAR", y="ANNUAL")
```

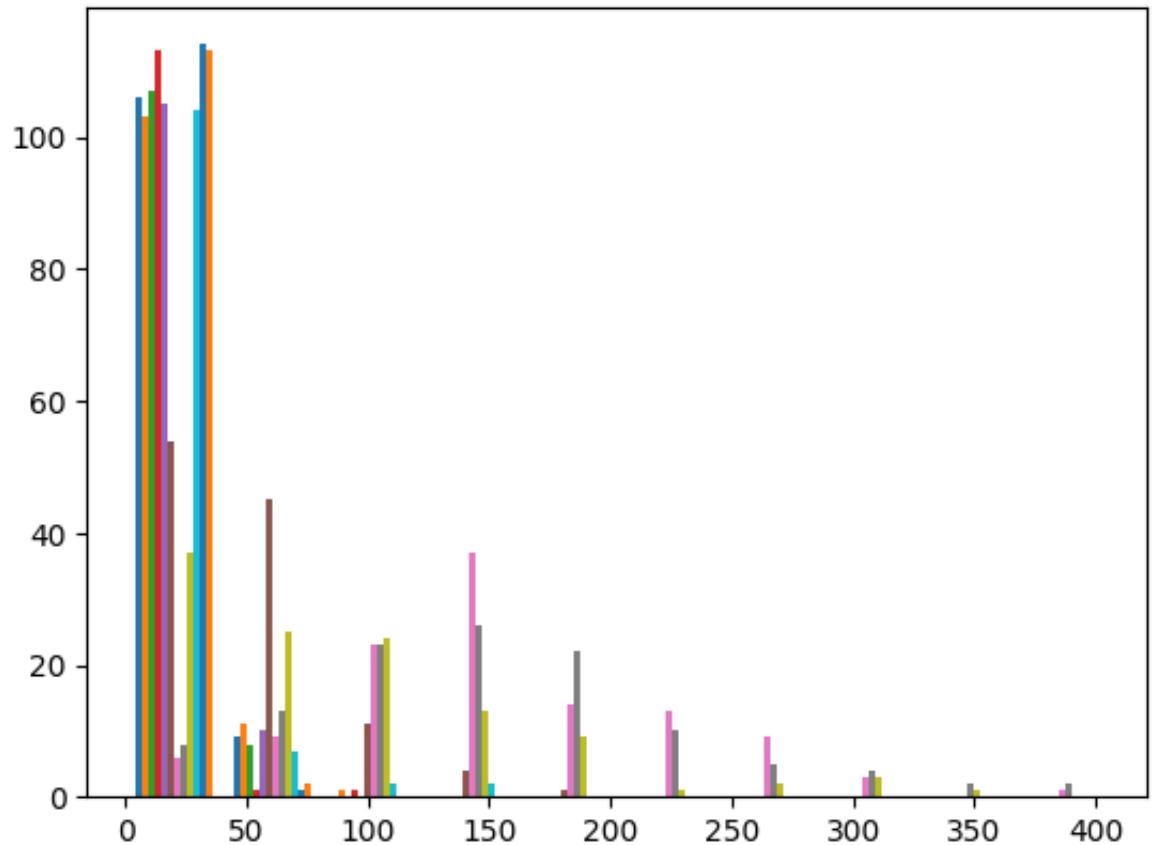
```
Out[247]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [248]: plt.hist(y)
```

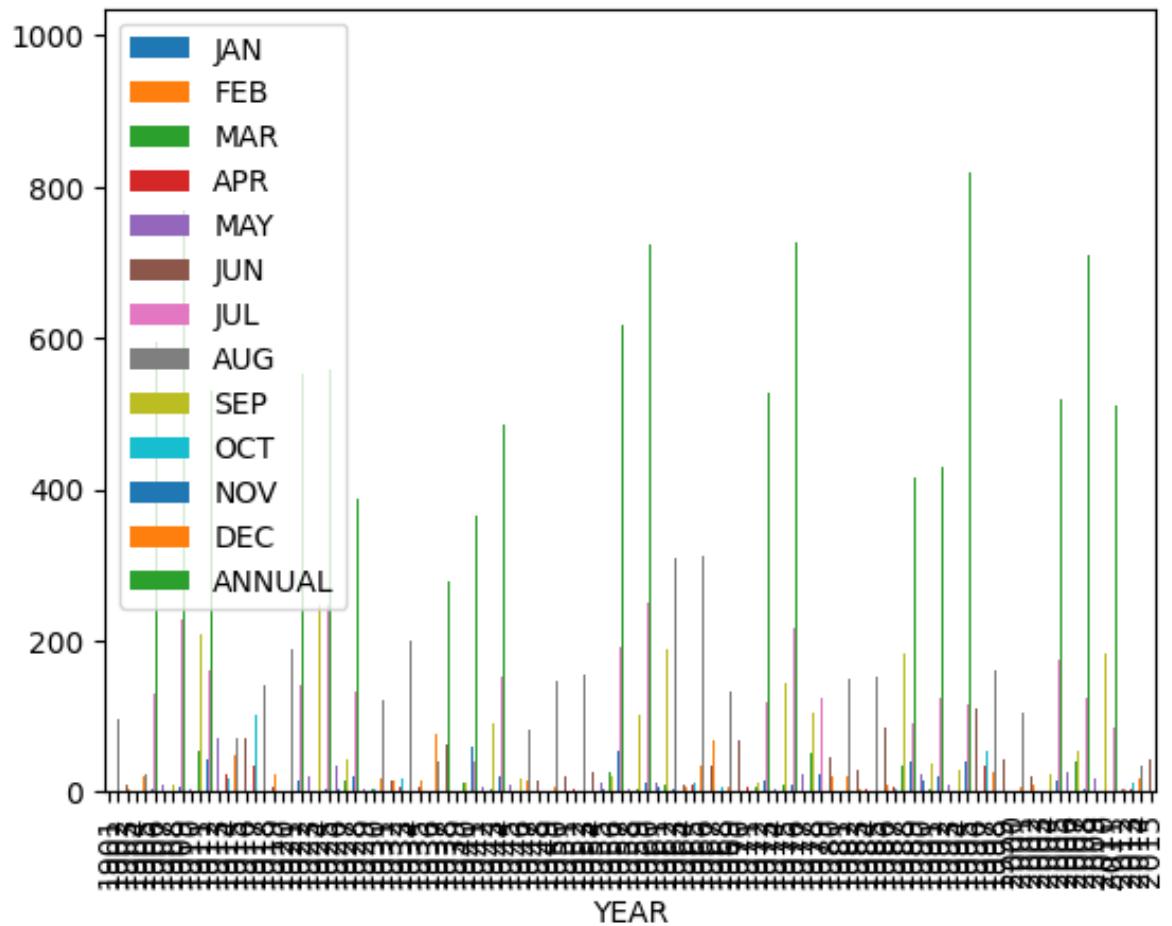
```
Out[248]: (array([[106.,  9.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [103., 11.,  1.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [107.,  8.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [113.,  1.,  1.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [105., 10.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [ 54., 45., 11.,  4.,  1.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [  6.,  9., 23., 37., 14., 13.,  9.,  3.,  0.,  0.,
       1.],
      [  8., 13., 23., 26., 22., 10.,  5.,  4.,  2.,  0.,
       2.],
      [ 37., 25., 24., 13.,  9.,  1.,  2.,  3.,  1.,  0.,
       0.],
      [104.,  7.,  2.,  2.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [114.,  1.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [113,  2,  0,  0,  0,  0,  0,  0,  0,  0,  0,
```

```
[1150, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2100, 2200, 2300, 2400, 2500, 2600, 2700, 2800, 2900, 3000, 3100, 3200, 3300, 3400, 3500, 3600, 3700, 3800, 3900, 4000],  
array([ 0. ,  40.53,  81.06, 121.59, 162.12, 202.65, 243.18, 28  
3.71,  
     324.24, 364.77, 405.3 ]),  
<a list of 12 BarContainer objects>)
```



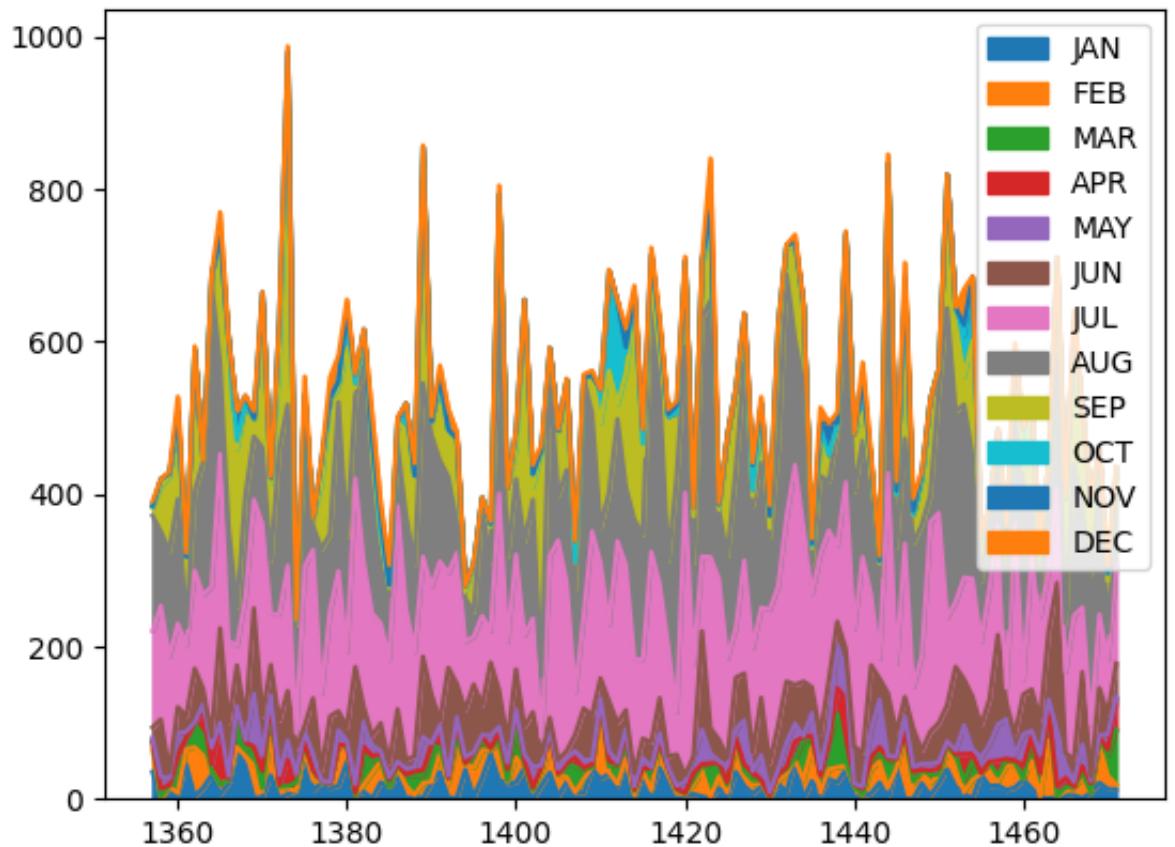
In [249]: `x.plot.bar(x="YEAR")`

Out[249]: <Axes: xlabel='YEAR'>



In [250]: `y.plot.area()`

Out[250]: <Axes: >



In [251]: `x=df[df["SUBDIVISION"]=="UTTARAKHAND"]
x`

Out[251]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1242	1242	UTTARAKHAND	1901	134.5	81.4	44.5	5.9	60.8	33.6	381.1	612.3	167.1	16.3	0.0	24.9
1243	1243	UTTARAKHAND	1902	0.0	17.0	52.2	63.7	52.1	113.1	444.1	327.5	220.4	31.9	2.1	0.0
1244	1244	UTTARAKHAND	1903	68.0	7.9	87.6	10.3	37.5	83.0	251.6	442.7	249.3	57.5	0.0	11.3
1245	1245	UTTARAKHAND	1904	40.0	5.2	78.3	13.6	61.1	180.1	449.6	417.2	174.1	6.3	35.6	31.0
1246	1246	UTTARAKHAND	1905	115.4	80.7	99.8	26.1	70.3	111.5	299.9	349.5	129.5	0.0	1.0	18.5
...
1352	1352	UTTARAKHAND	2011	30.9	65.2	18.0	30.9	84.2	223.1	433.3	523.7	148.4	3.4	1.2	2.3
1353	1353	UTTARAKHAND	2012	38.8	11.9	28.1	39.2	9.1	46.0	387.1	419.5	220.6	4.7	3.4	15.5
1354	1354	UTTARAKHAND	2013	73.0	188.3	22.0	24.7	18.2	488.9	413.4	359.4	111.3	29.1	3.2	3.8
1355	1355	UTTARAKHAND	2014	45.9	99.9	68.4	37.6	52.9	62.9	462.7	264.2	107.9	40.8	0.0	44.3
1356	1356	UTTARAKHAND	2015	54.5	62.6	127.3	57.3	38.0	186.6	337.0	305.3	52.6	16.8	2.4	7.2

115 rows × 20 columns

In [252]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–Dec"],axis=1)`

Out[252]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1242	1901	134.5	81.4	44.5	5.9	60.8	33.6	381.1	612.3	167.1	16.3	0.0	24.9
1243	1902	0.0	17.0	52.2	63.7	52.1	113.1	444.1	327.5	220.4	31.9	2.1	0.0
1244	1903	68.0	7.9	87.6	10.3	37.5	83.0	251.6	442.7	249.3	57.5	0.0	11.3
1245	1904	40.0	5.2	78.3	13.6	61.1	180.1	449.6	417.2	174.1	6.3	35.6	31.0
1246	1905	115.4	80.7	99.8	26.1	70.3	111.5	299.9	349.5	129.5	0.0	1.0	18.5
...
1352	2011	30.9	65.2	18.0	30.9	84.2	223.1	433.3	523.7	148.4	3.4	1.2	2.3
1353	2012	38.8	11.9	28.1	39.2	9.1	46.0	387.1	419.5	220.6	4.7	3.4	15.5
1354	2013	73.0	188.3	22.0	24.7	18.2	488.9	413.4	359.4	111.3	29.1	3.2	3.8
1355	2014	45.9	99.9	68.4	37.6	52.9	62.9	462.7	264.2	107.9	40.8	0.0	44.3
1356	2015	54.5	62.6	127.3	57.3	38.0	186.6	337.0	305.3	52.6	16.8	2.4	7.2

115 rows × 14 columns

In [253]:

```
y=x.drop(["YEAR","ANNUAL"],axis=1)  
y
```

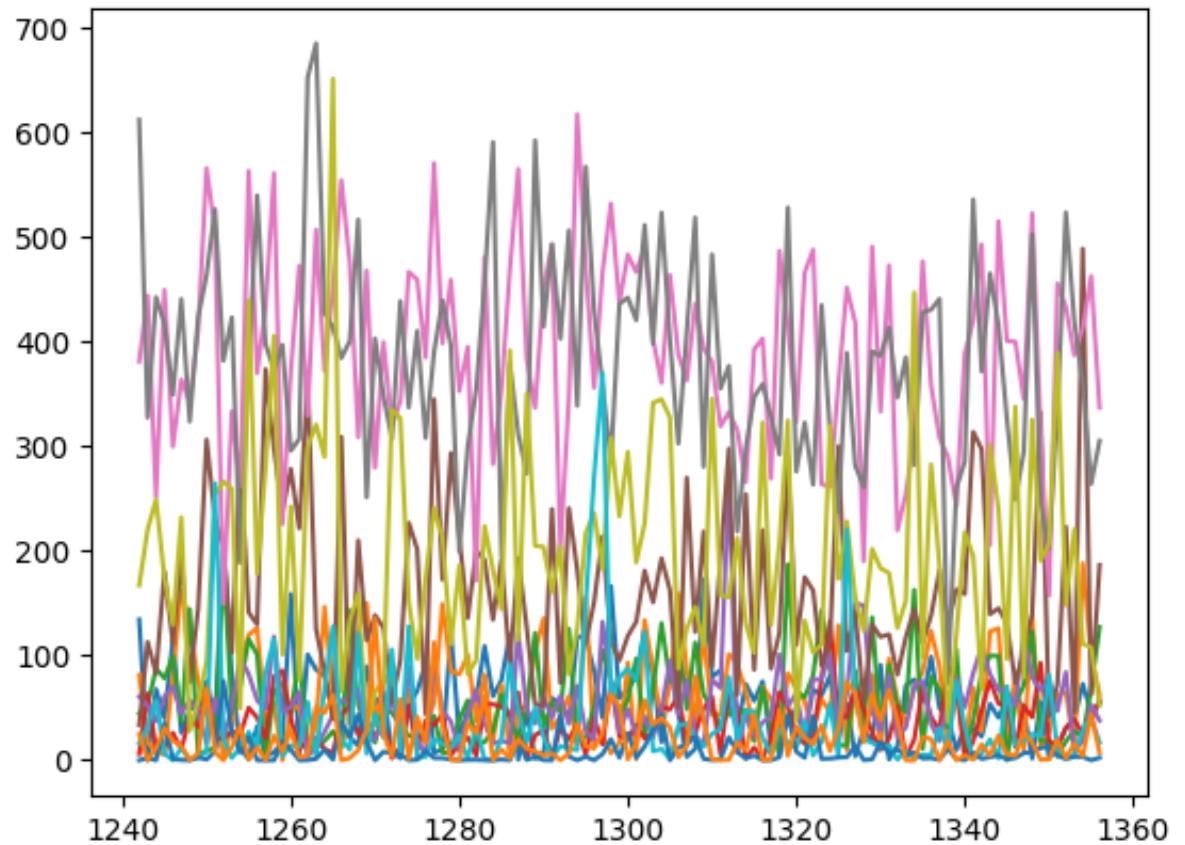
Out[253]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1242	134.5	81.4	44.5	5.9	60.8	33.6	381.1	612.3	167.1	16.3	0.0	24.9
1243	0.0	17.0	52.2	63.7	52.1	113.1	444.1	327.5	220.4	31.9	2.1	0.0
1244	68.0	7.9	87.6	10.3	37.5	83.0	251.6	442.7	249.3	57.5	0.0	11.3
1245	40.0	5.2	78.3	13.6	61.1	180.1	449.6	417.2	174.1	6.3	35.6	31.0
1246	115.4	80.7	99.8	26.1	70.3	111.5	299.9	349.5	129.5	0.0	1.0	18.5
...
1352	30.9	65.2	18.0	30.9	84.2	223.1	433.3	523.7	148.4	3.4	1.2	2.3
1353	38.8	11.9	28.1	39.2	9.1	46.0	387.1	419.5	220.6	4.7	3.4	15.5
1354	73.0	188.3	22.0	24.7	18.2	488.9	413.4	359.4	111.3	29.1	3.2	3.8
1355	45.9	99.9	68.4	37.6	52.9	62.9	462.7	264.2	107.9	40.8	0.0	44.3
1356	54.5	62.6	127.3	57.3	38.0	186.6	337.0	305.3	52.6	16.8	2.4	7.2

115 rows × 12 columns

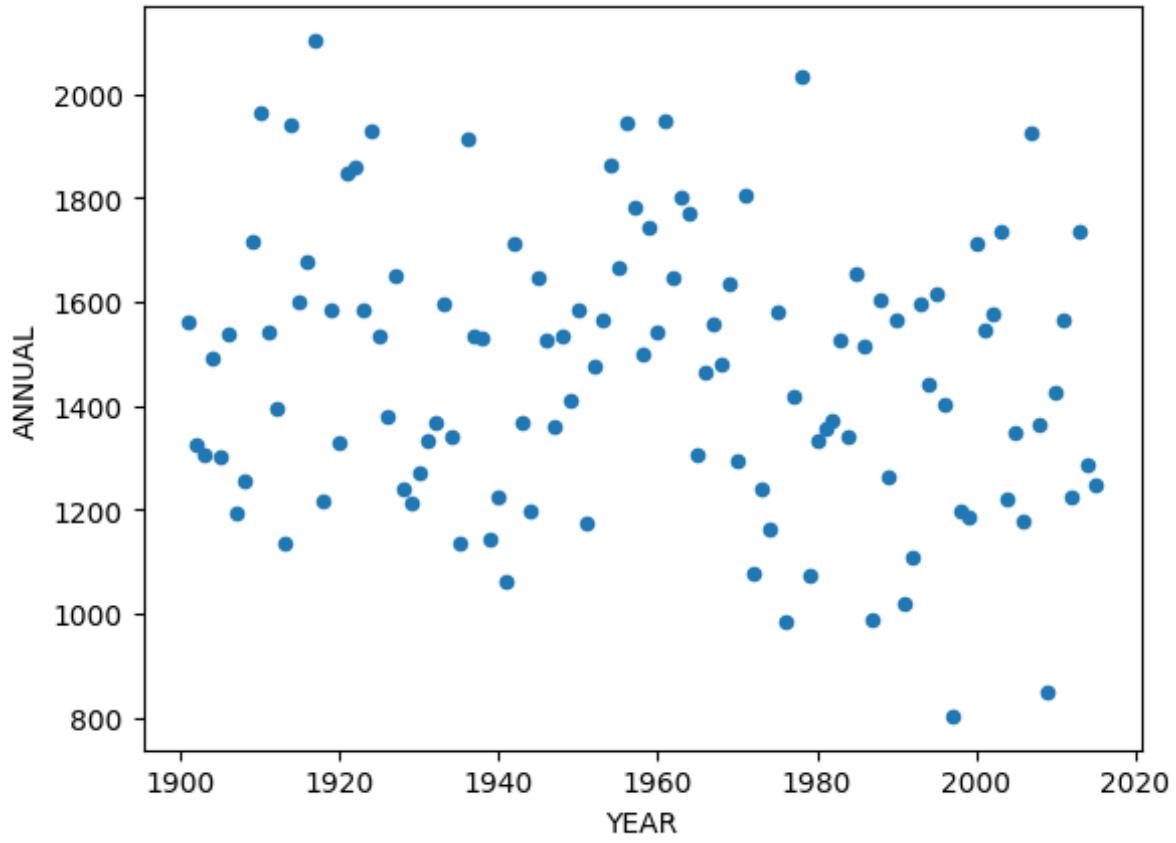
```
In [254]: plt.plot(y)
```

```
Out[254]: [
```



```
In [255]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

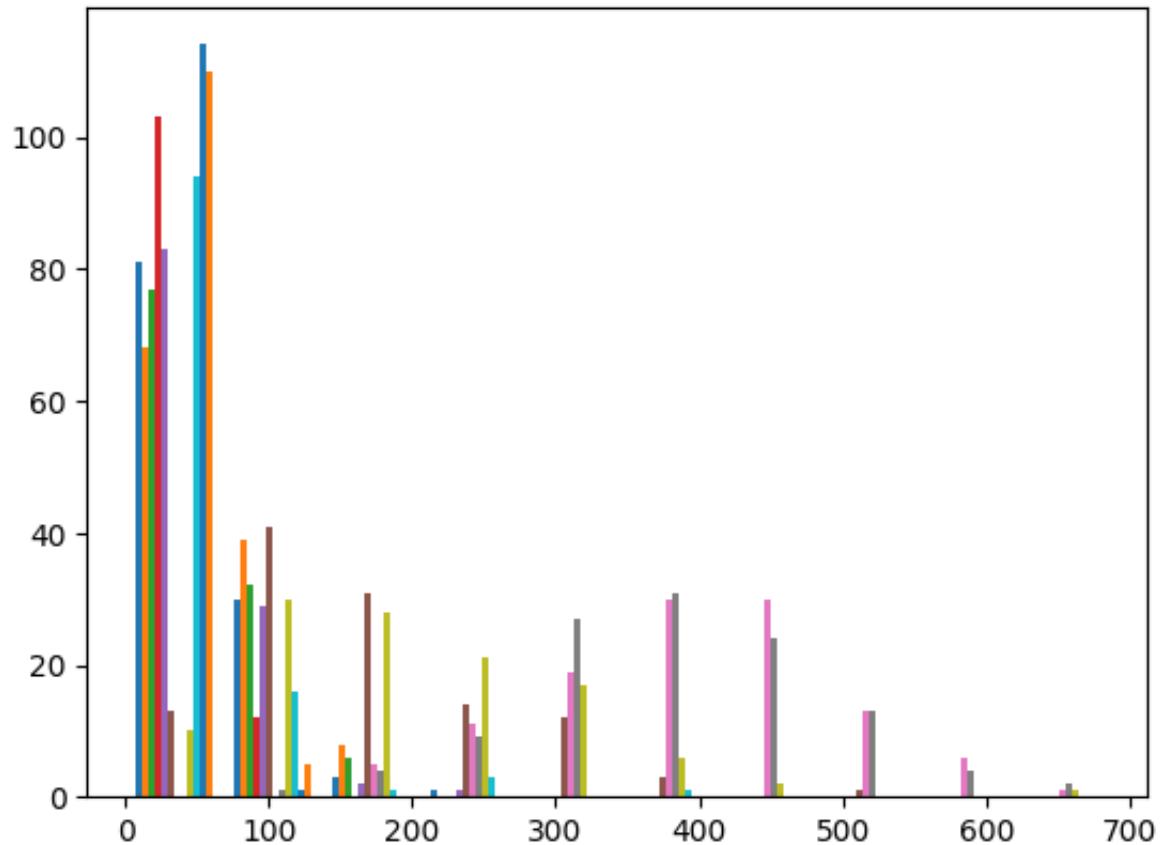
```
Out[255]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [256]: plt.hist(y)
```

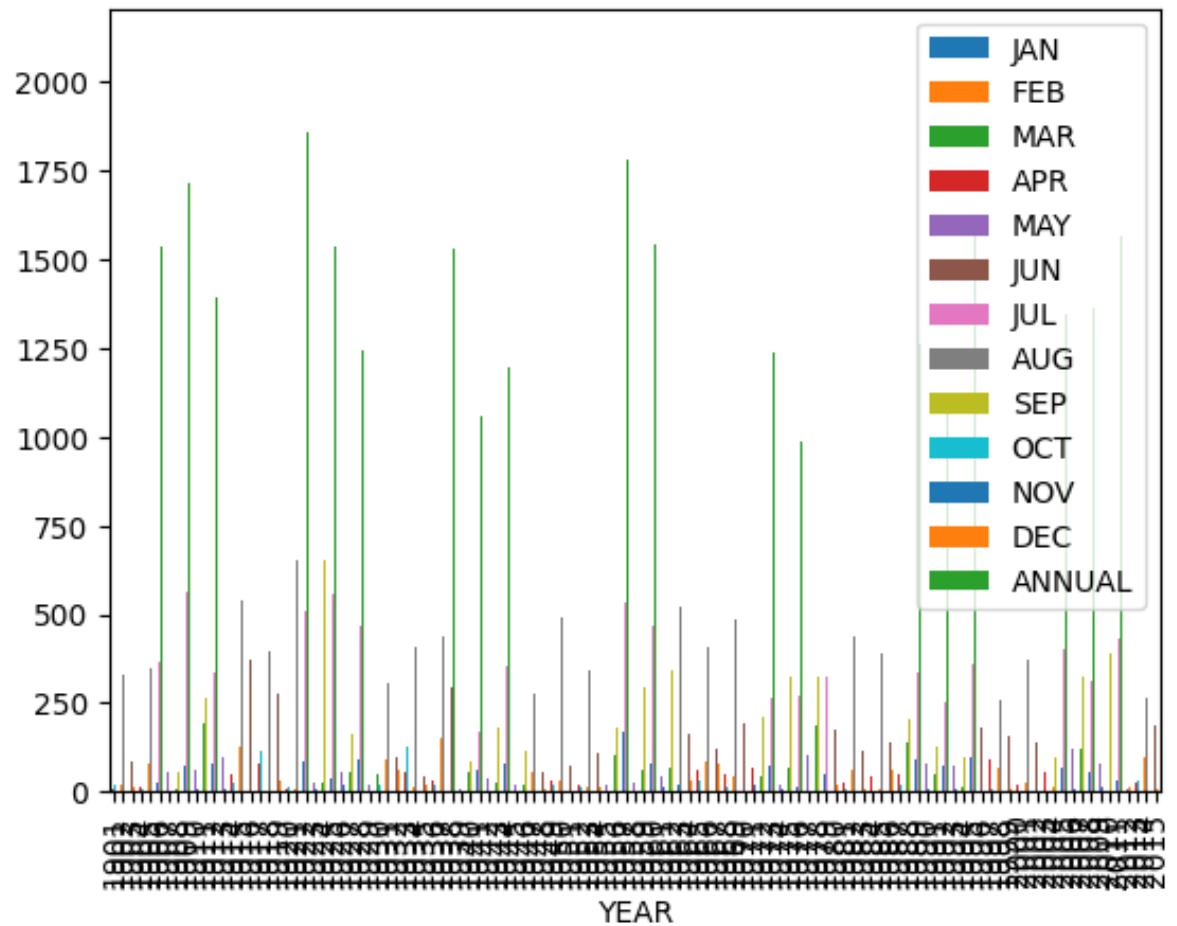
```
Out[256]: (array([[ 81.,  30.,   3.,   1.,   0.,   0.,   0.,   0.,   0.,
       0.],
       [ 68.,  39.,   8.,   0.,   0.,   0.,   0.,   0.,   0.,
       0.],
       [ 77.,  32.,   6.,   0.,   0.,   0.,   0.,   0.,   0.,
       0.],
       [103.,  12.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,
       0.],
       [ 83.,  29.,   2.,   1.,   0.,   0.,   0.,   0.,   0.,
       0.],
       [ 13.,  41.,  31.,  14.,  12.,   3.,   0.,   1.,   0.,
       0.],
       [  0.,   0.,   5.,  11.,  19.,  30.,  30.,  13.,   6.,
       1.],
       [  0.,   1.,   4.,   9.,  27.,  31.,  24.,  13.,   4.,
       2.],
       [ 10.,  30.,  28.,  21.,  17.,   6.,   2.,   0.,   0.,
       1.],
       [ 94.,  16.,   1.,   3.,   0.,   1.,   0.,   0.,   0.,
       0.],
       [114.,   1.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,
       0.],
       [110.]]),
```

```
    0.1]),  
array([ 0. ,  68.52, 137.04, 205.56, 274.08, 342.6 , 411.12, 47  
9.64,  
      548.16, 616.68, 685.2 ]),  
<a list of 12 BarContainer objects>)
```



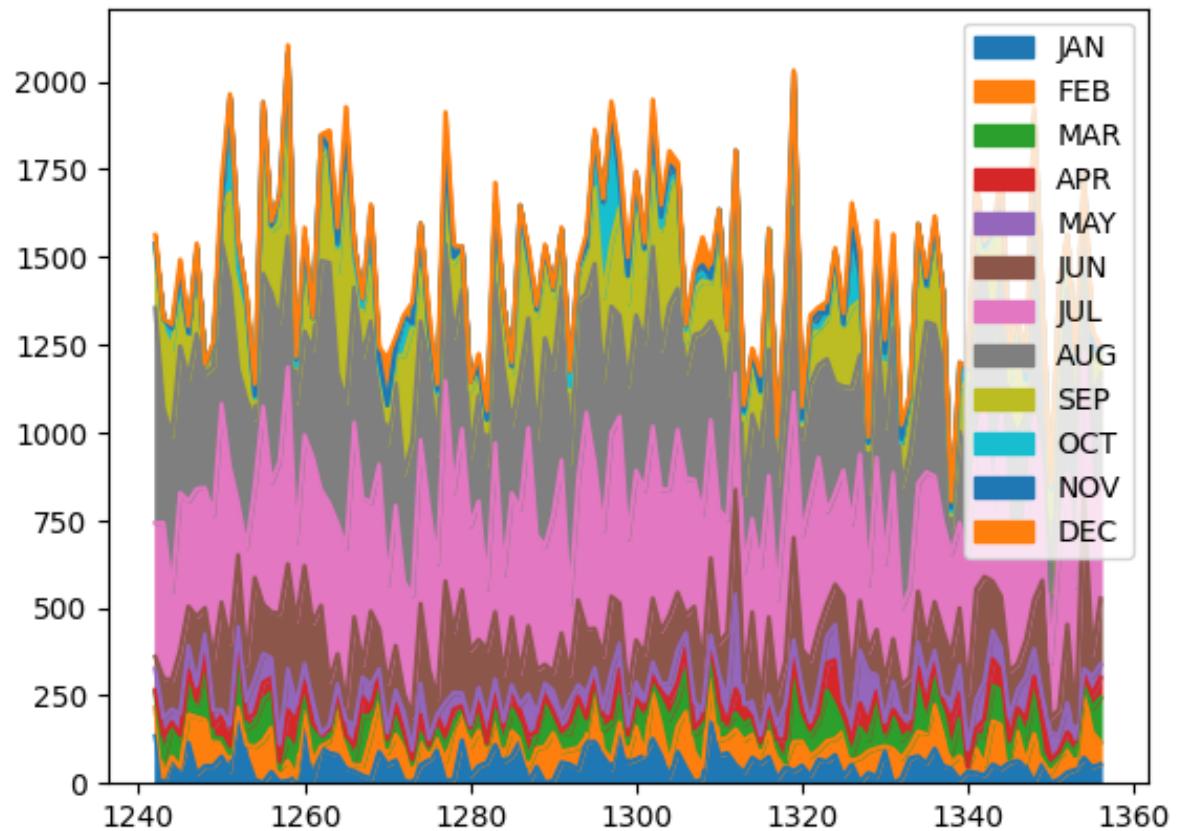
In [257]: `x.plot.bar(x="YEAR")`

Out[257]: <Axes: xlabel='YEAR'>



In [258]: `y.plot.area()`

Out[258]: <Axes: >



WEST UTTAR PRADESH

In [259]: `x=df[df["SUBDIVISION"]=="WEST UTTAR PRADESH"]
x`

Out[259]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1127	1127	WEST UTTAR PRADESH	1901	51.4	25.6	9.5	0.7	5.6	23.8	201.9	374.3	67.7
1128	1128	WEST UTTAR PRADESH	1902	4.6	4.6	0.6	4.8	7.2	54.5	325.9	180.6	143.1
1129	1129	WEST UTTAR PRADESH	1903	13.4	0.4	1.2	0.0	8.2	32.7	145.4	279.1	150.4
1130	1130	WEST UTTAR PRADESH	1904	6.3	2.0	29.7	0.4	24.8	68.5	358.8	311.1	97.1
1131	1131	WEST UTTAR PRADESH	1905	32.3	26.6	14.8	3.6	7.1	18.9	139.8	95.0	92.2
...
1237	1237	WEST UTTAR PRADESH	2011	2.1	10.4	3.9	2.8	29.6	175.9	215.9	232.3	101.7
1238	1238	WEST UTTAR PRADESH	2012	14.5	0.1	1.4	4.7	0.3	4.0	145.1	149.1	67.8
1239	1239	WEST UTTAR PRADESH	2013	20.4	69.5	3.5	1.6	2.1	190.6	233.9	287.1	52.2
1240	1240	WEST UTTAR PRADESH	2014	48.3	29.4	22.6	5.3	11.0	22.0	151.6	81.0	84.7
1241	1241	WEST UTTAR PRADESH	2015	31.6	7.2	66.8	21.0	8.1	72.0	194.2	143.5	26.5

115 rows × 20 columns

In [260]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X"])`

Out[260]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	A
1127	1901	51.4	25.6	9.5	0.7	5.6	23.8	201.9	374.3	67.7	7.6	0.0	7.9	
1128	1902	4.6	4.6	0.6	4.8	7.2	54.5	325.9	180.6	143.1	9.6	0.9	0.2	
1129	1903	13.4	0.4	1.2	0.0	8.2	32.7	145.4	279.1	150.4	177.3	0.0	0.4	
1130	1904	6.3	2.0	29.7	0.4	24.8	68.5	358.8	311.1	97.1	2.7	15.7	28.2	
1131	1905	32.3	26.6	14.8	3.6	7.1	18.9	139.8	95.0	92.2	0.2	0.0	2.9	
...	
1237	2011	2.1	10.4	3.9	2.8	29.6	175.9	215.9	232.3	101.7	0.7	0.5	1.5	
1238	2012	14.5	0.1	1.4	4.7	0.3	4.0	145.1	149.1	67.8	0.5	0.1	2.0	
1239	2013	20.4	69.5	3.5	1.6	2.1	190.6	233.9	287.1	52.2	61.2	1.7	8.9	
1240	2014	48.3	29.4	22.6	5.3	11.0	22.0	151.6	81.0	84.7	14.6	0.0	16.3	
1241	2015	31.6	7.2	66.8	21.0	8.1	72.0	194.2	143.5	26.5	6.9	2.0	3.0	

115 rows × 14 columns

In [261]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

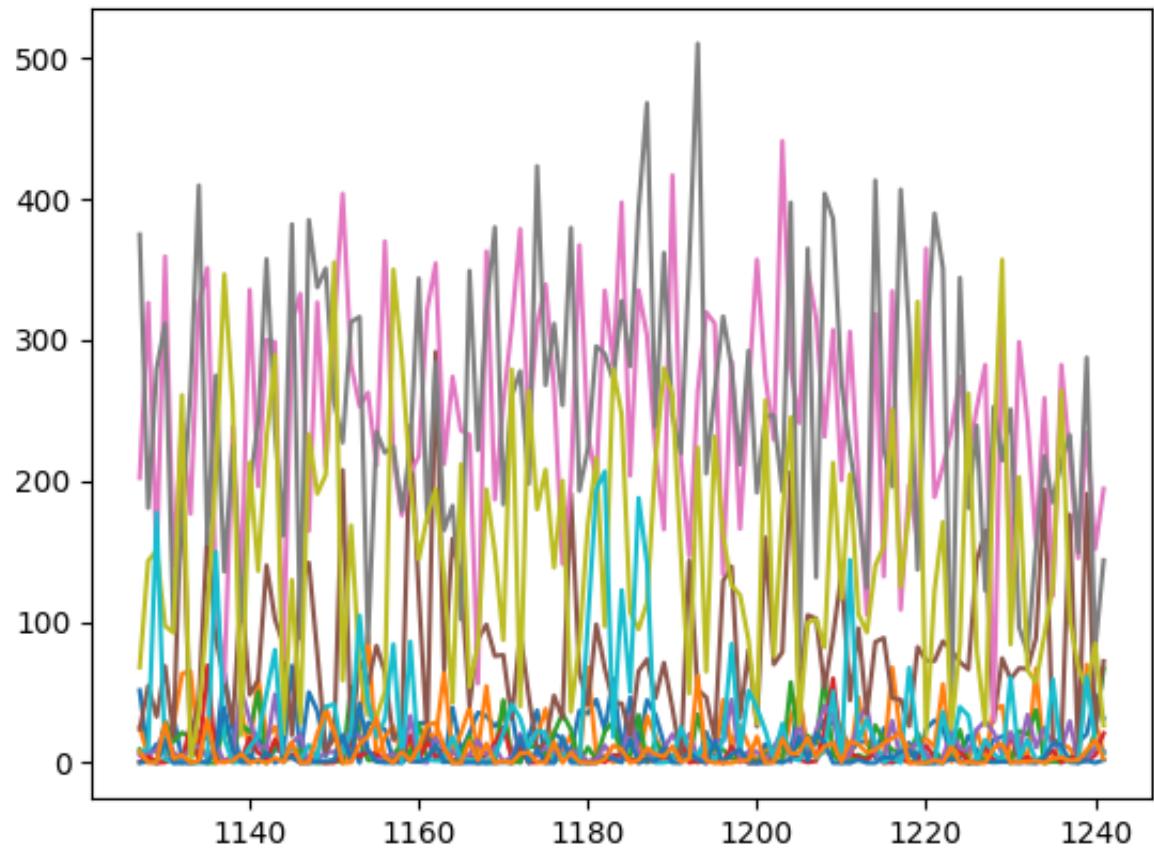
Out[261]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1127	51.4	25.6	9.5	0.7	5.6	23.8	201.9	374.3	67.7	7.6	0.0	7.9	
1128	4.6	4.6	0.6	4.8	7.2	54.5	325.9	180.6	143.1	9.6	0.9	0.2	
1129	13.4	0.4	1.2	0.0	8.2	32.7	145.4	279.1	150.4	177.3	0.0	0.4	
1130	6.3	2.0	29.7	0.4	24.8	68.5	358.8	311.1	97.1	2.7	15.7	28.2	
1131	32.3	26.6	14.8	3.6	7.1	18.9	139.8	95.0	92.2	0.2	0.0	2.9	
...	
1237	2.1	10.4	3.9	2.8	29.6	175.9	215.9	232.3	101.7	0.7	0.5	1.5	
1238	14.5	0.1	1.4	4.7	0.3	4.0	145.1	149.1	67.8	0.5	0.1	2.0	
1239	20.4	69.5	3.5	1.6	2.1	190.6	233.9	287.1	52.2	61.2	1.7	8.9	
1240	48.3	29.4	22.6	5.3	11.0	22.0	151.6	81.0	84.7	14.6	0.0	16.3	
1241	31.6	7.2	66.8	21.0	8.1	72.0	194.2	143.5	26.5	6.9	2.0	3.0	

115 rows × 12 columns

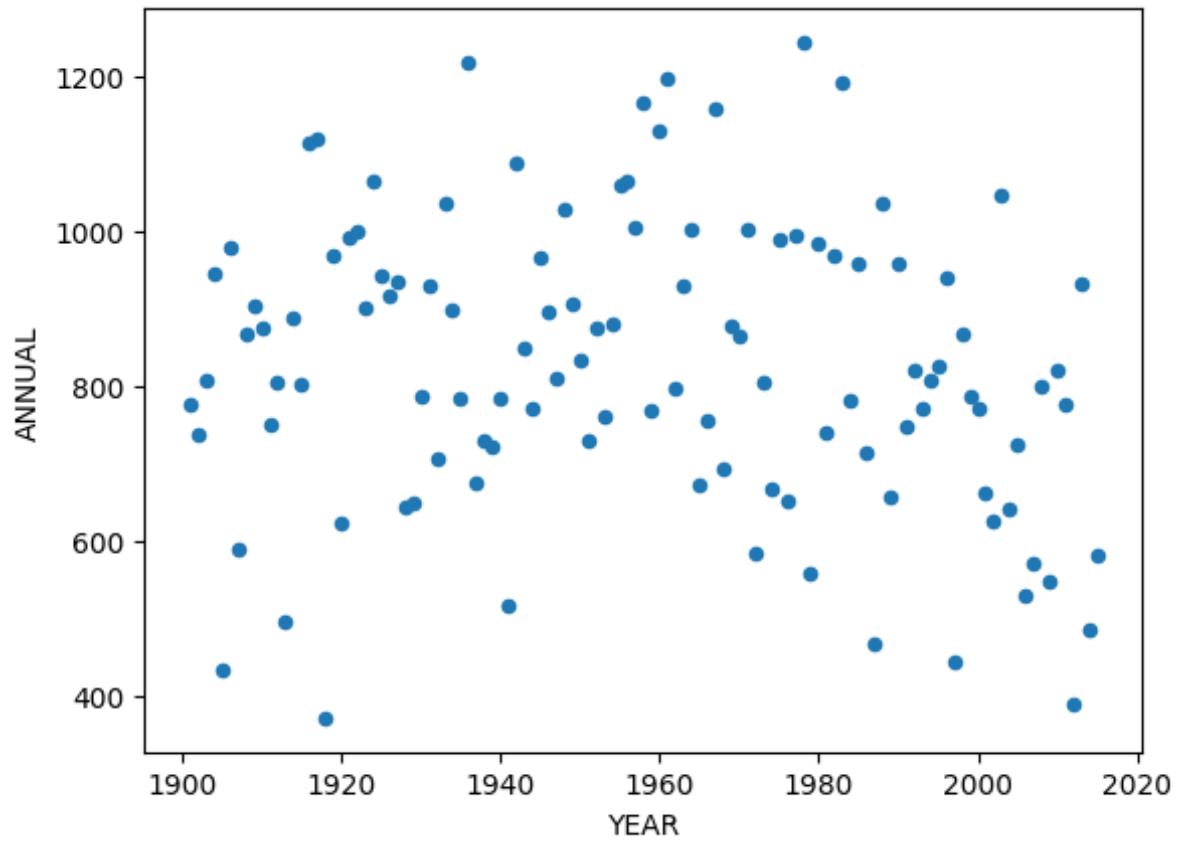
In [262]: `plt.plot(y)`

Out[262]: [`<matplotlib.lines.Line2D at 0x26d9d552dd0>`,
`<matplotlib.lines.Line2D at 0x26d9f775b50>`,
`<matplotlib.lines.Line2D at 0x26d9f776050>`,
`<matplotlib.lines.Line2D at 0x26d9f776390>`,
`<matplotlib.lines.Line2D at 0x26d9f776690>`,
`<matplotlib.lines.Line2D at 0x26d9f776a50>`,
`<matplotlib.lines.Line2D at 0x26d9f776fd0>`,
`<matplotlib.lines.Line2D at 0x26d9f777410>`,
`<matplotlib.lines.Line2D at 0x26d9f776790>`,
`<matplotlib.lines.Line2D at 0x26d9f776bd0>`,
`<matplotlib.lines.Line2D at 0x26d9f777e10>`,
`<matplotlib.lines.Line2D at 0x26d9f780210>`]



```
In [263]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

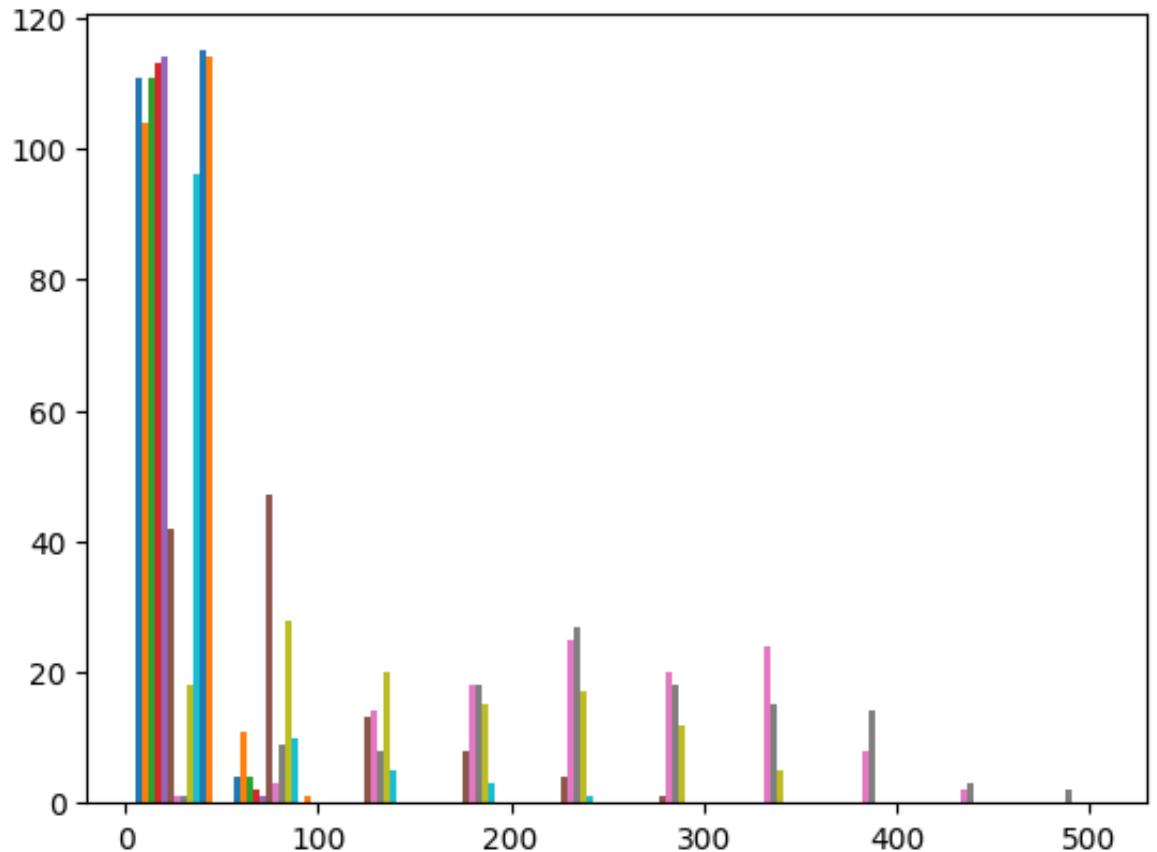
```
Out[263]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [264]: plt.hist(y)
```

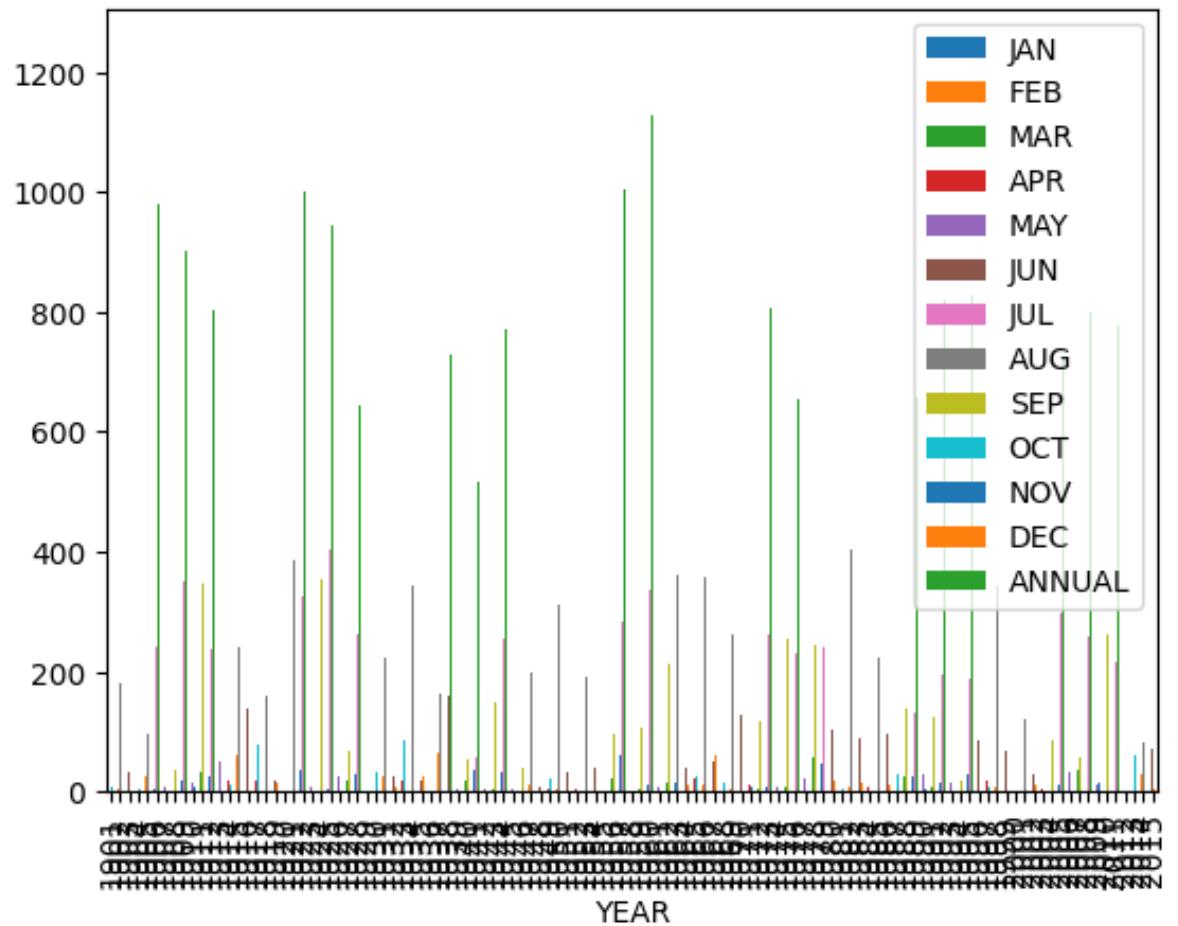
```
Out[264]: (array([[111.,  4.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [104., 11.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [111.,  4.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [113.,  2.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [114.,  1.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [ 42.,  47., 13.,  8.,  4.,  1.,  0.,  0.,  0.,  0.,
       0.],
      [  1.,   3., 14., 18., 25., 20., 24.,  8.,  2.,
       0.],
      [  1.,   9.,  8., 18., 27., 18., 15., 14.,  3.,
       2.],
      [ 18.,  28., 20., 15., 17., 12.,  5.,  0.,  0.,
       0.],
      [ 96., 10.,  5.,  3.,  1.,  0.,  0.,  0.,  0.,
       0.],
      [115.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [114,
```

```
[1]: [0.0, 50.96, 101.92, 152.88, 203.84, 254.8, 305.76, 356.72,
      407.68, 458.64, 509.6],  
<a list of 12 BarContainer objects>)
```



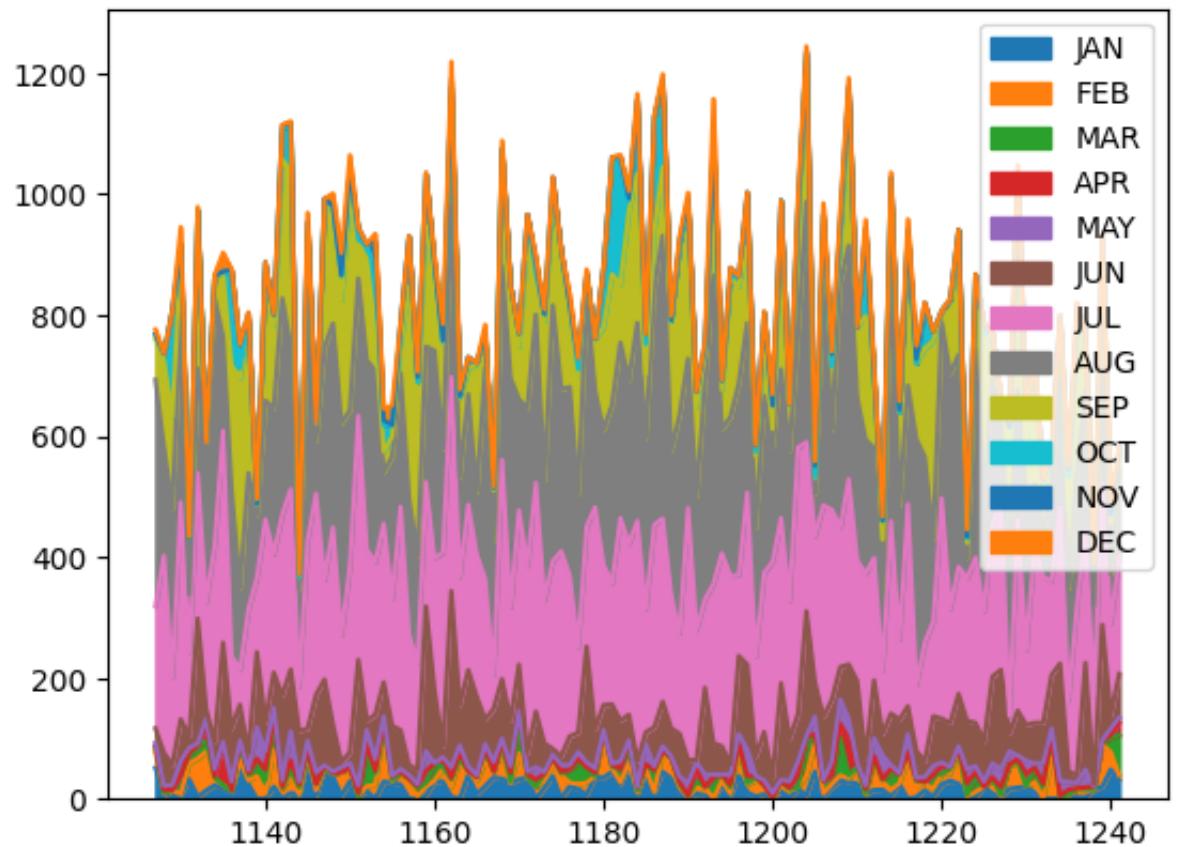
In [265]: `x.plot.bar(x="YEAR")`

Out[265]: <Axes: xlabel='YEAR'>



In [266]: `y.plot.area()`

Out[266]: <Axes: >



EAST UTTAR PRADESH

In [270]: `x=df[df["SUBDIVISION"]=="EAST UTTAR PRADESH"]`

X

Out[270]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1012	1012	EAST UTTAR PRADESH	1901	62.6	31.3	8.2	1.1	13.6	21.8	226.5	285.6	215.4
1013	1013	EAST UTTAR PRADESH	1902	6.1	2.3	2.4	2.0	21.4	32.5	411.5	155.4	257.2
1014	1014	EAST UTTAR PRADESH	1903	8.2	0.4	1.3	0.7	15.3	71.6	115.3	420.2	258.7
1015	1015	EAST UTTAR PRADESH	1904	7.3	1.5	8.3	0.4	28.7	148.0	359.4	328.8	95.0
1016	1016	EAST UTTAR PRADESH	1905	16.8	23.6	20.0	5.4	15.4	17.3	302.4	316.2	169.5
...
1122	1122	EAST UTTAR PRADESH	2011	1.0	2.7	1.6	2.9	32.2	163.8	197.9	232.1	146.4
1123	1123	EAST UTTAR PRADESH	2012	20.3	1.2	3.4	2.8	0.2	18.5	234.2	156.0	164.4
1124	1124	EAST UTTAR PRADESH	2013	6.1	59.6	2.7	8.7	1.1	309.7	230.0	246.1	78.2
1125	1125	EAST UTTAR PRADESH	2014	47.4	25.8	15.4	1.7	10.7	47.8	224.5	138.1	106.7
1126	1126	EAST UTTAR PRADESH	2015	30.0	4.1	48.2	23.2	8.6	95.3	179.0	175.8	21.9

115 rows × 20 columns

In [271]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out[271]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	A
1012	1901	62.6	31.3	8.2	1.1	13.6	21.8	226.5	285.6	215.4	4.9	0.1	2.1	
1013	1902	6.1	2.3	2.4	2.0	21.4	32.5	411.5	155.4	257.2	13.2	1.2	0.0	
1014	1903	8.2	0.4	1.3	0.7	15.3	71.6	115.3	420.2	258.7	324.7	0.0	0.0	
1015	1904	7.3	1.5	8.3	0.4	28.7	148.0	359.4	328.8	95.0	50.6	17.0	26.3	
1016	1905	16.8	23.6	20.0	5.4	15.4	17.3	302.4	316.2	169.5	3.3	0.0	1.6	
...	
1122	2011	1.0	2.7	1.6	2.9	32.2	163.8	197.9	232.1	146.4	0.6	0.0	0.0	
1123	2012	20.3	1.2	3.4	2.8	0.2	18.5	234.2	156.0	164.4	0.7	0.3	0.7	
1124	2013	6.1	59.6	2.7	8.7	1.1	309.7	230.0	246.1	78.2	97.4	0.5	1.1	
1125	2014	47.4	25.8	15.4	1.7	10.7	47.8	224.5	138.1	106.7	74.7	0.0	8.4	
1126	2015	30.0	4.1	48.2	23.2	8.6	95.3	179.0	175.8	21.9	11.8	0.5	4.9	

115 rows × 14 columns

In [272]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

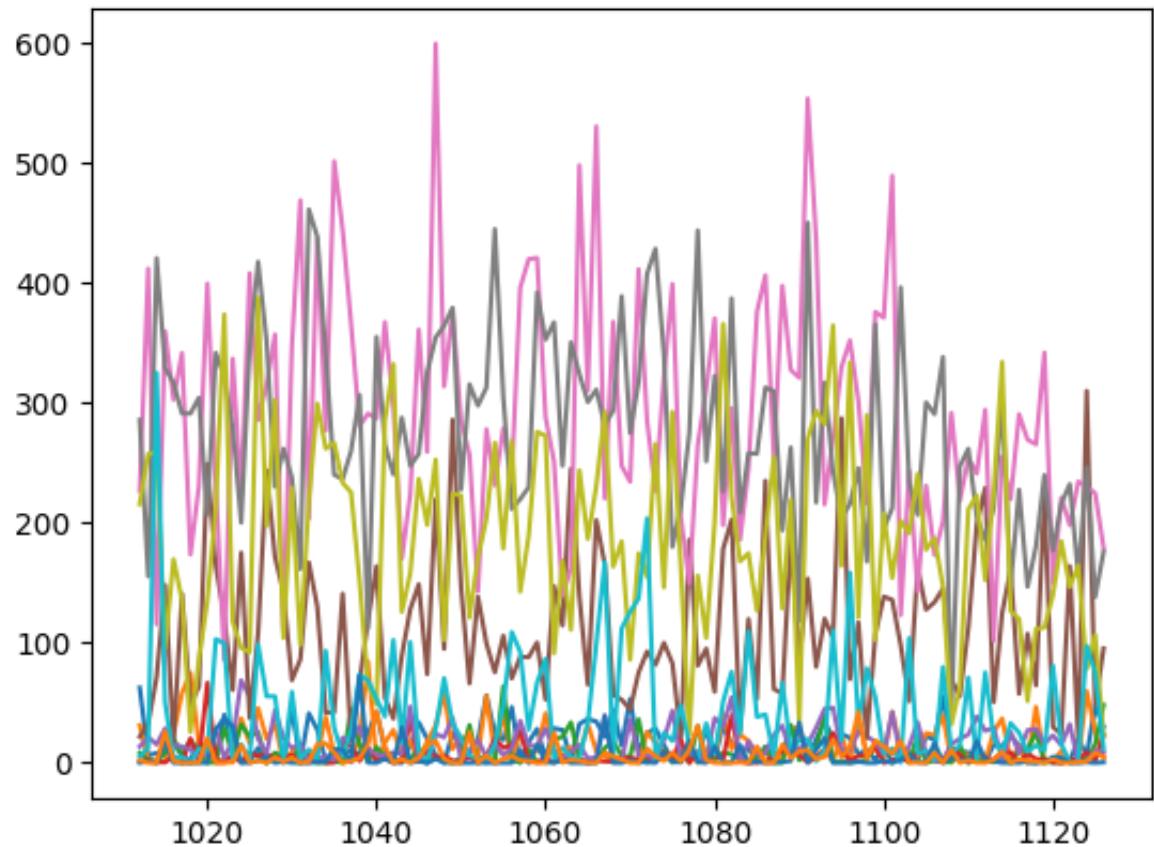
Out[272]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1012	62.6	31.3	8.2	1.1	13.6	21.8	226.5	285.6	215.4	4.9	0.1	2.1	
1013	6.1	2.3	2.4	2.0	21.4	32.5	411.5	155.4	257.2	13.2	1.2	0.0	
1014	8.2	0.4	1.3	0.7	15.3	71.6	115.3	420.2	258.7	324.7	0.0	0.0	
1015	7.3	1.5	8.3	0.4	28.7	148.0	359.4	328.8	95.0	50.6	17.0	26.3	
1016	16.8	23.6	20.0	5.4	15.4	17.3	302.4	316.2	169.5	3.3	0.0	1.6	
...	
1122	1.0	2.7	1.6	2.9	32.2	163.8	197.9	232.1	146.4	0.6	0.0	0.0	
1123	20.3	1.2	3.4	2.8	0.2	18.5	234.2	156.0	164.4	0.7	0.3	0.7	
1124	6.1	59.6	2.7	8.7	1.1	309.7	230.0	246.1	78.2	97.4	0.5	1.1	
1125	47.4	25.8	15.4	1.7	10.7	47.8	224.5	138.1	106.7	74.7	0.0	8.4	
1126	30.0	4.1	48.2	23.2	8.6	95.3	179.0	175.8	21.9	11.8	0.5	4.9	

115 rows × 12 columns

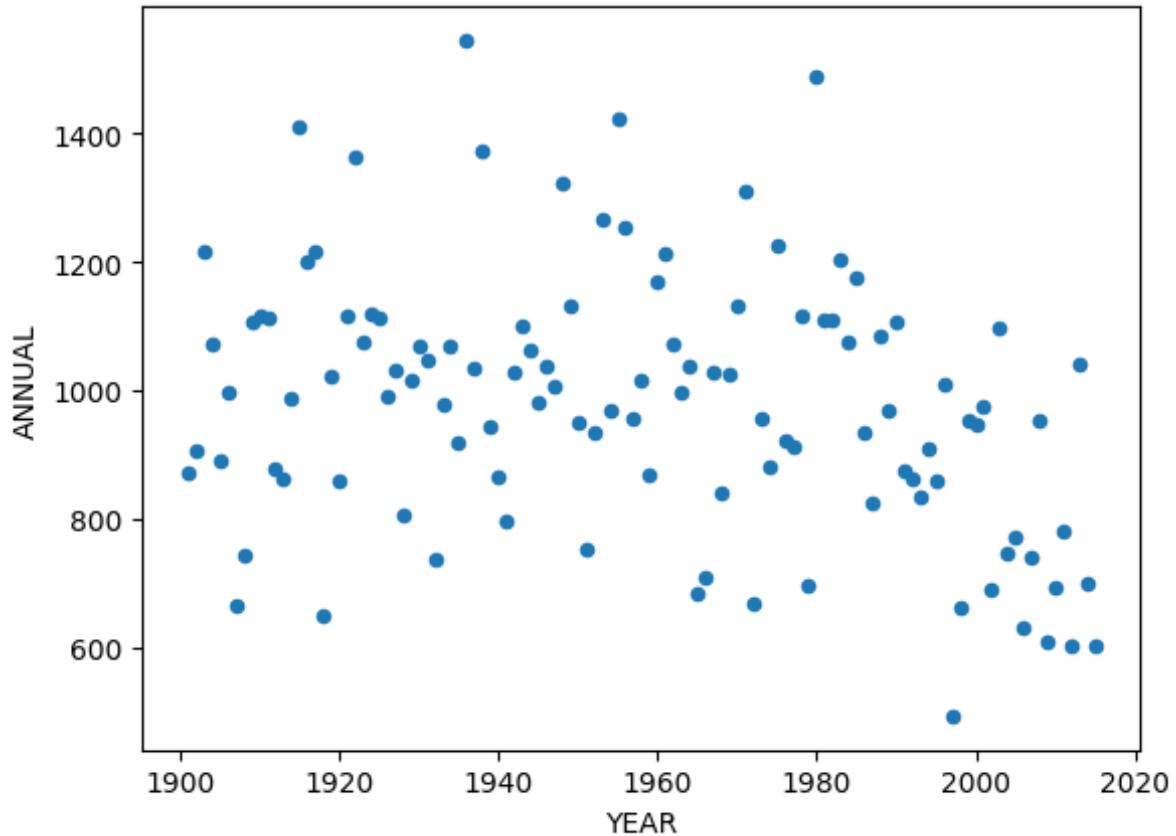
```
In [273]: plt.plot(y)
```

```
Out[273]: [<matplotlib.lines.Line2D at 0x26da15a08d0>,
 <matplotlib.lines.Line2D at 0x26da14c9250>,
 <matplotlib.lines.Line2D at 0x26da14e34d0>,
 <matplotlib.lines.Line2D at 0x26da14b9250>,
 <matplotlib.lines.Line2D at 0x26da155ab50>,
 <matplotlib.lines.Line2D at 0x26da155af50>,
 <matplotlib.lines.Line2D at 0x26da1559d50>,
 <matplotlib.lines.Line2D at 0x26da14fcfd0>,
 <matplotlib.lines.Line2D at 0x26da155b390>,
 <matplotlib.lines.Line2D at 0x26da1559a50>,
 <matplotlib.lines.Line2D at 0x26da14f2210>,
 <matplotlib.lines.Line2D at 0x26da14ac6d0>]
```



```
In [274]: x.plot.scatter(x="YEAR", y="ANNUAL")
```

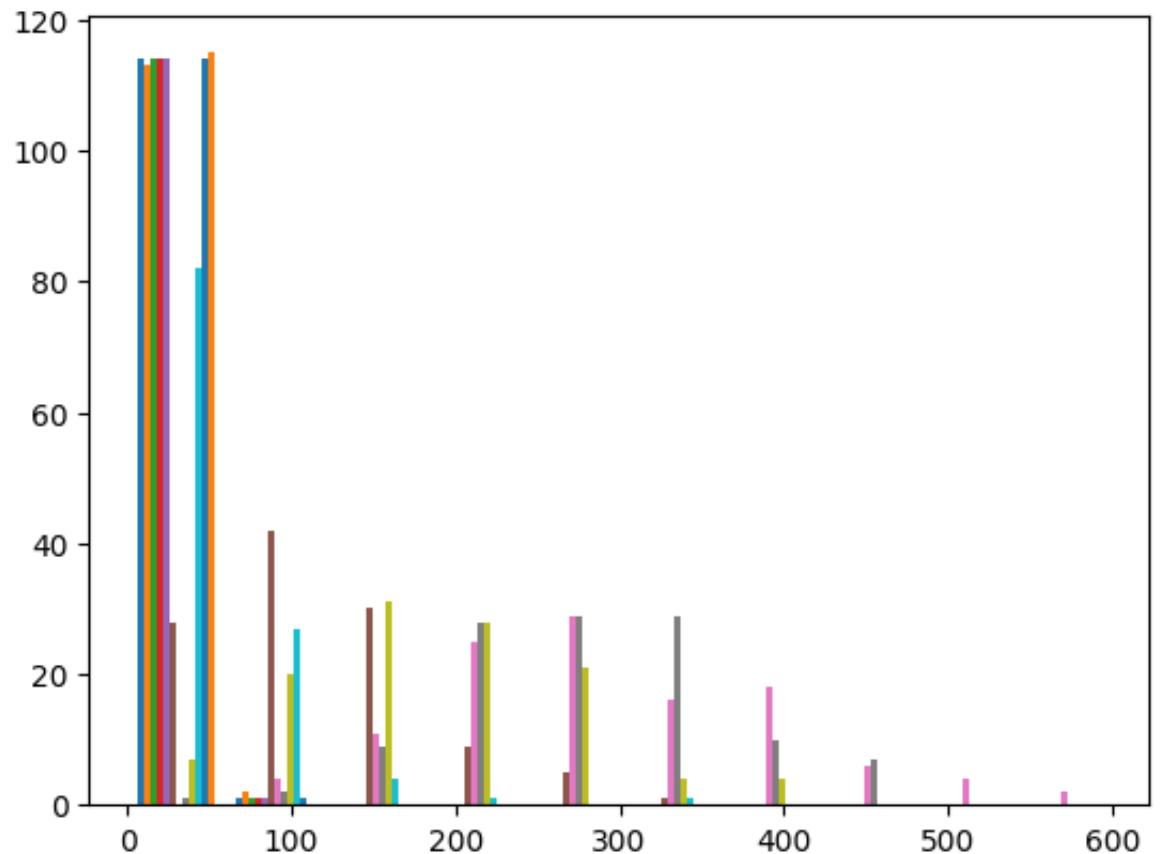
```
Out[274]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [275]: plt.hist(y)
```

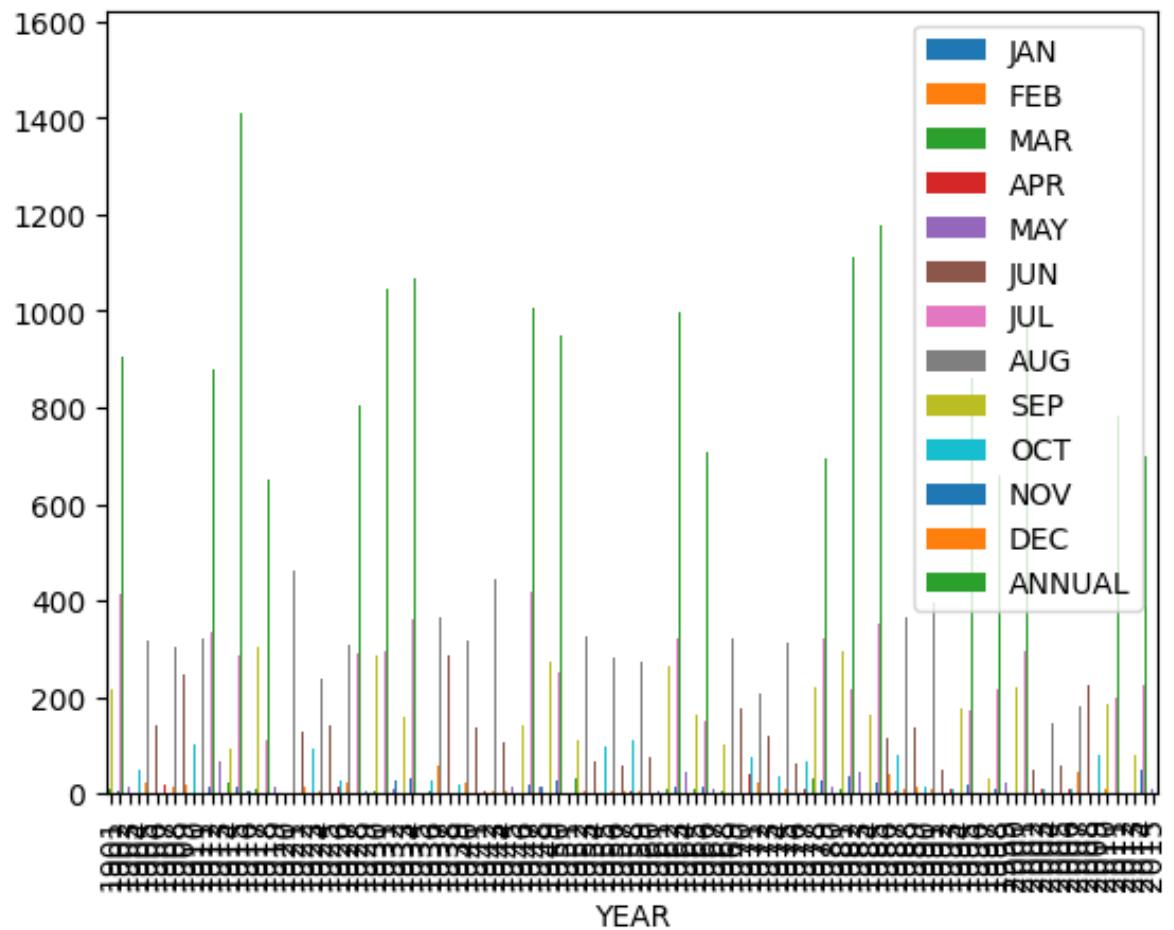
```
Out[275]: (array([[114., 1., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [113., 2., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [114., 1., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [114., 1., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [114., 1., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [114., 1., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [114., 1., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [28., 42., 30., 9., 5., 1., 0., 0., 0., 0.,
       0.],
      [0., 4., 11., 25., 29., 16., 18., 6., 4.,
       2.],
      [1., 2., 9., 28., 29., 29., 10., 7., 0.,
       0.],
      [7., 20., 31., 28., 21., 4., 4., 0., 0.,
       0.],
      [82., 27., 4., 1., 0., 1., 0., 0., 0.,
       0.],
      [114., 1., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [115., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.]])
```

```
    119.76, 179.64, 239.52, 299.4 , 359.28, 41  
9.16,  
        479.04, 538.92, 598.8 ]),  
<a list of 12 BarContainer objects>)
```



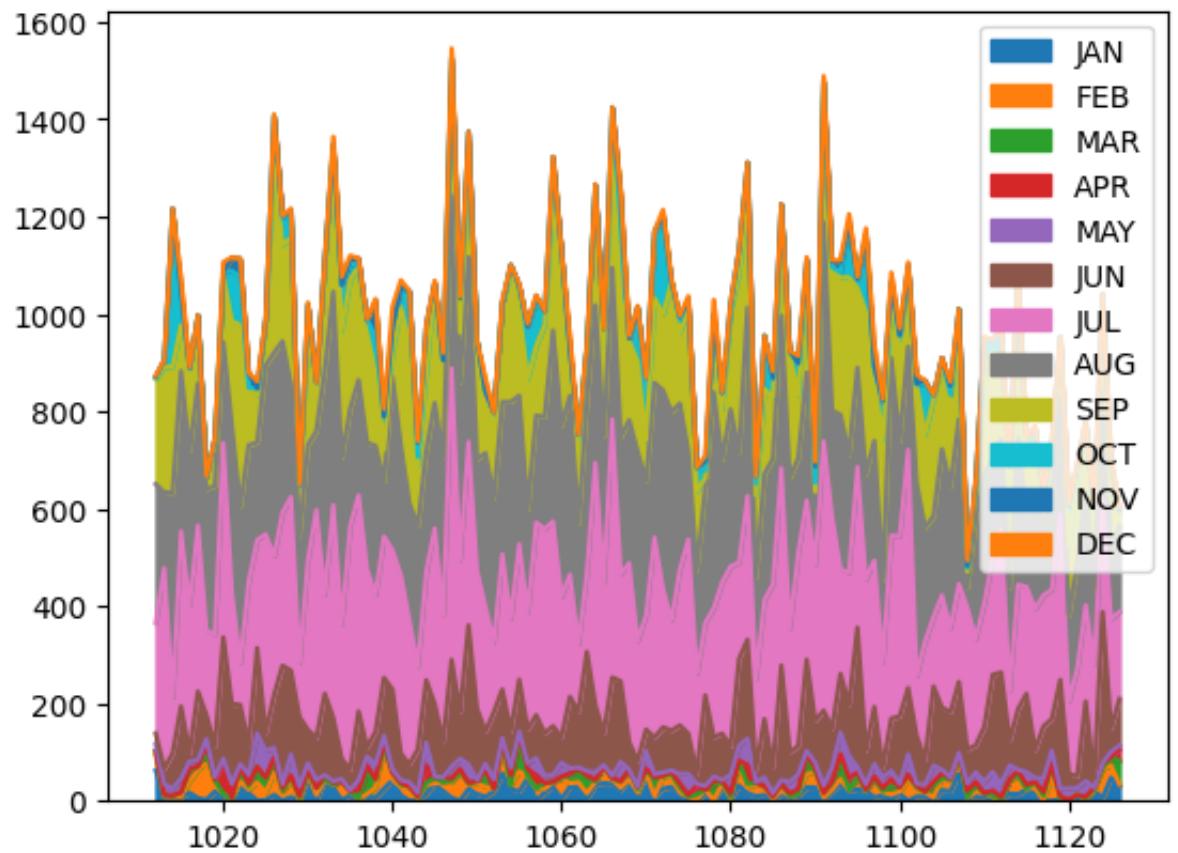
In [276]: `x.plot.bar(x="YEAR")`

Out[276]: <Axes: xlabel='YEAR'>



In [277]: `y.plot.area()`

Out[277]: <Axes: >



BIHAR

In [283]: `x=df[df["SUBDIVISION"]=="BIHAR"]`

`x`

Out[283]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEF
897	897	BIHAR	1901	51.8	19.6	11.9	1.1	65.6	66.3	245.9	319.4	155.1
898	898	BIHAR	1902	4.6	0.7	24.3	17.3	66.3	118.2	361.0	225.5	358.7
899	899	BIHAR	1903	5.3	4.7	2.0	4.7	28.2	192.9	115.0	342.6	173.9
900	900	BIHAR	1904	6.3	1.7	3.5	5.3	118.7	191.6	394.4	351.3	84.4
901	901	BIHAR	1905	16.0	30.1	32.6	21.4	77.5	50.5	409.1	495.3	353.9
...
1007	1007	BIHAR	2011	4.2	7.7	9.2	23.9	74.5	211.0	241.1	278.7	234.1
1008	1008	BIHAR	2012	18.1	2.7	7.3	20.4	18.8	96.2	354.0	240.4	233.8
1009	1009	BIHAR	2013	5.1	22.6	0.6	32.3	89.5	183.3	182.0	213.6	143.3
1010	1010	BIHAR	2014	17.0	33.5	8.4	0.7	103.9	115.2	265.4	307.6	160.3
1011	1011	BIHAR	2015	12.8	1.8	27.2	38.7	39.5	122.1	231.5	287.0	101.7

115 rows × 20 columns

In [284]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–Dec"])`

Out[284]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
897	1901	51.8	19.6	11.9	1.1	65.6	66.3	245.9	319.4	155.1	8.3	7.3	0.1
898	1902	4.6	0.7	24.3	17.3	66.3	118.2	361.0	225.5	358.7	28.5	1.1	0.0
899	1903	5.3	4.7	2.0	4.7	28.2	192.9	115.0	342.6	173.9	147.0	0.1	0.0
900	1904	6.3	1.7	3.5	5.3	118.7	191.6	394.4	351.3	84.4	98.1	10.6	3.8
901	1905	16.0	30.1	32.6	21.4	77.5	50.5	409.1	495.3	353.9	11.6	0.0	0.6
...
1007	2011	4.2	7.7	9.2	23.9	74.5	211.0	241.1	278.7	234.1	10.0	2.0	0.9
1008	2012	18.1	2.7	7.3	20.4	18.8	96.2	354.0	240.4	233.8	34.3	6.4	0.0
1009	2013	5.1	22.6	0.6	32.3	89.5	183.3	182.0	213.6	143.3	197.1	0.4	0.0
1010	2014	17.0	33.5	8.4	0.7	103.9	115.2	265.4	307.6	160.3	47.8	0.0	1.2
1011	2015	12.8	1.8	27.2	38.7	39.5	122.1	231.5	287.0	101.7	10.4	0.0	0.0

115 rows × 14 columns

In [285]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
`y`

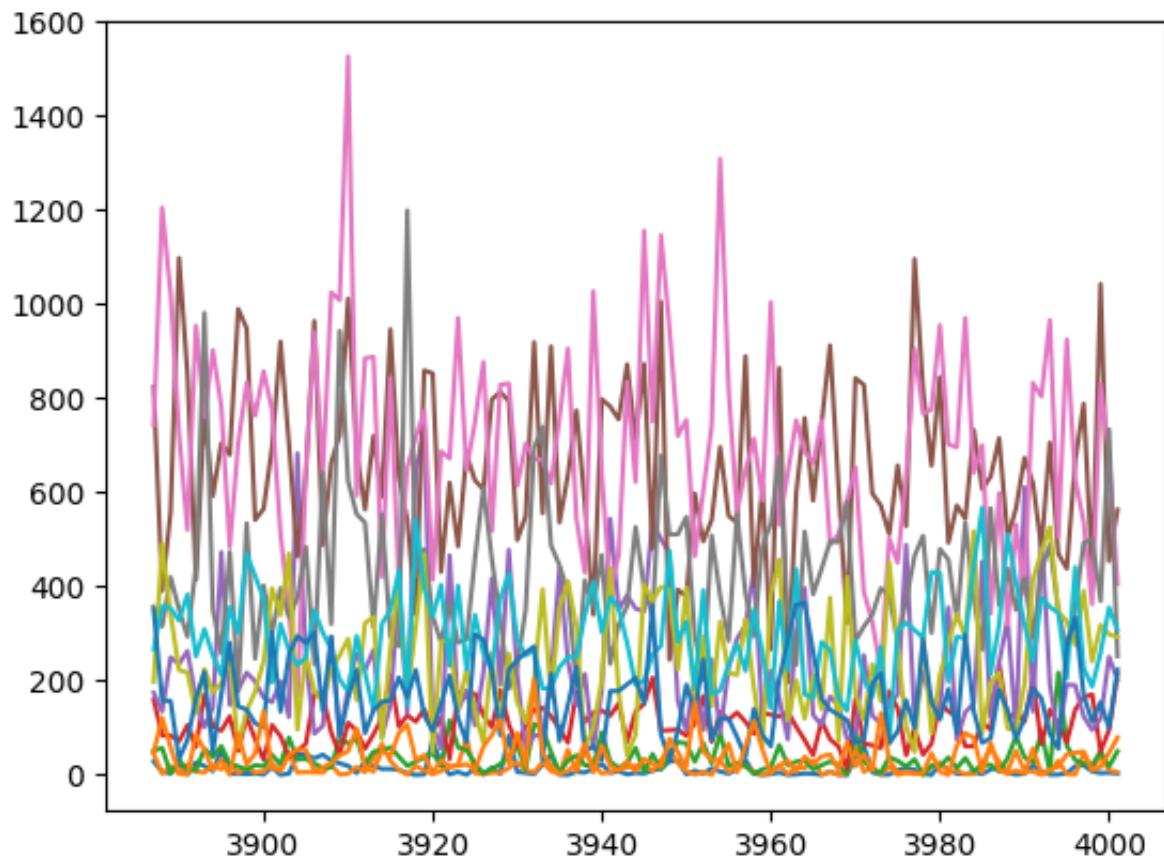
Out[285]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
897	51.8	19.6	11.9	1.1	65.6	66.3	245.9	319.4	155.1	8.3	7.3	0.1
898	4.6	0.7	24.3	17.3	66.3	118.2	361.0	225.5	358.7	28.5	1.1	0.0
899	5.3	4.7	2.0	4.7	28.2	192.9	115.0	342.6	173.9	147.0	0.1	0.0
900	6.3	1.7	3.5	5.3	118.7	191.6	394.4	351.3	84.4	98.1	10.6	3.8
901	16.0	30.1	32.6	21.4	77.5	50.5	409.1	495.3	353.9	11.6	0.0	0.6
...
1007	4.2	7.7	9.2	23.9	74.5	211.0	241.1	278.7	234.1	10.0	2.0	0.9
1008	18.1	2.7	7.3	20.4	18.8	96.2	354.0	240.4	233.8	34.3	6.4	0.0
1009	5.1	22.6	0.6	32.3	89.5	183.3	182.0	213.6	143.3	197.1	0.4	0.0
1010	17.0	33.5	8.4	0.7	103.9	115.2	265.4	307.6	160.3	47.8	0.0	1.2
1011	12.8	1.8	27.2	38.7	39.5	122.1	231.5	287.0	101.7	10.4	0.0	0.0

115 rows × 12 columns

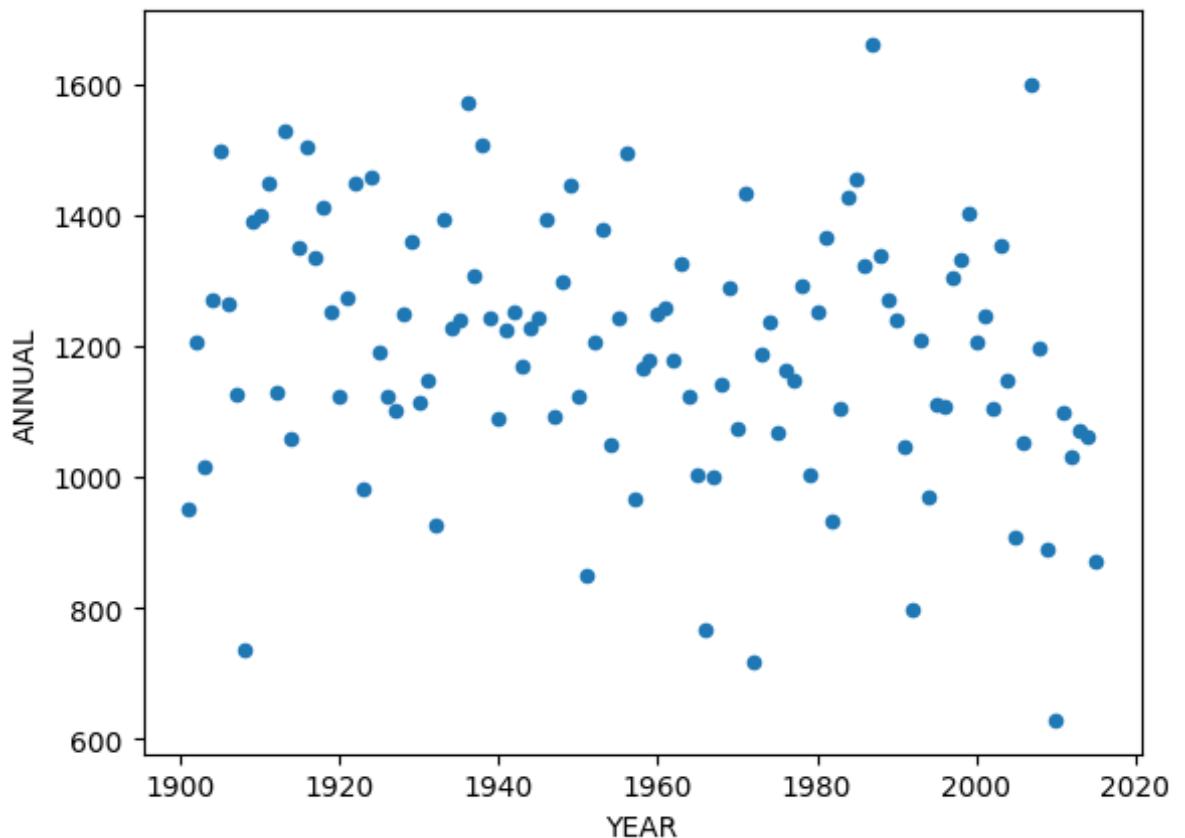
```
In [281]: plt.plot(y)
```

```
Out[281]: [<matplotlib.lines.Line2D at 0x26da1716890>,
 <matplotlib.lines.Line2D at 0x26da453a890>,
 <matplotlib.lines.Line2D at 0x26da4544950>,
 <matplotlib.lines.Line2D at 0x26da4544d10>,
 <matplotlib.lines.Line2D at 0x26da4545010>,
 <matplotlib.lines.Line2D at 0x26da45453d0>,
 <matplotlib.lines.Line2D at 0x26da4545810>,
 <matplotlib.lines.Line2D at 0x26da4545d50>,
 <matplotlib.lines.Line2D at 0x26da4545110>,
 <matplotlib.lines.Line2D at 0x26da4545550>,
 <matplotlib.lines.Line2D at 0x26da4546750>,
 <matplotlib.lines.Line2D at 0x26da452ec10>]
```



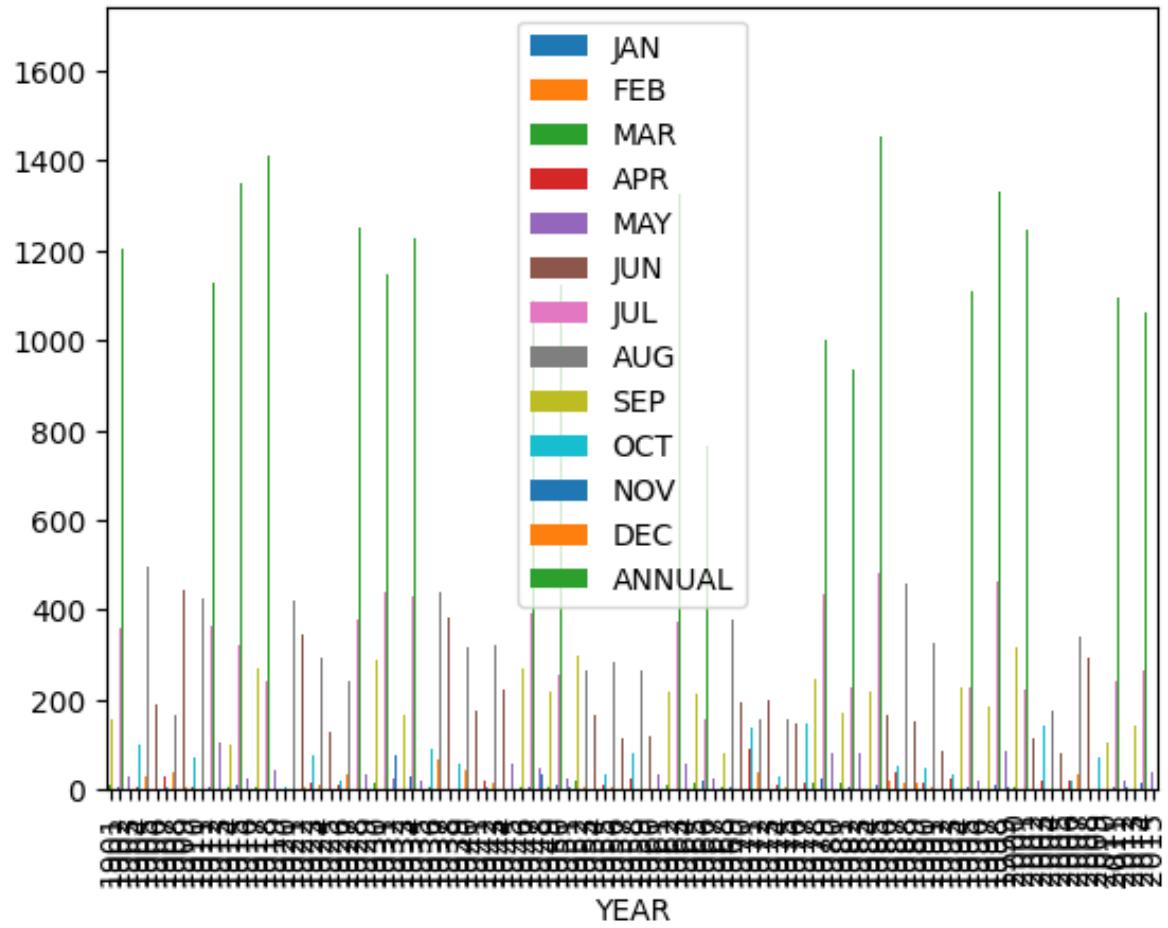
```
In [286]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

```
Out[286]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [287]: x.plot.bar(x="YEAR")
```

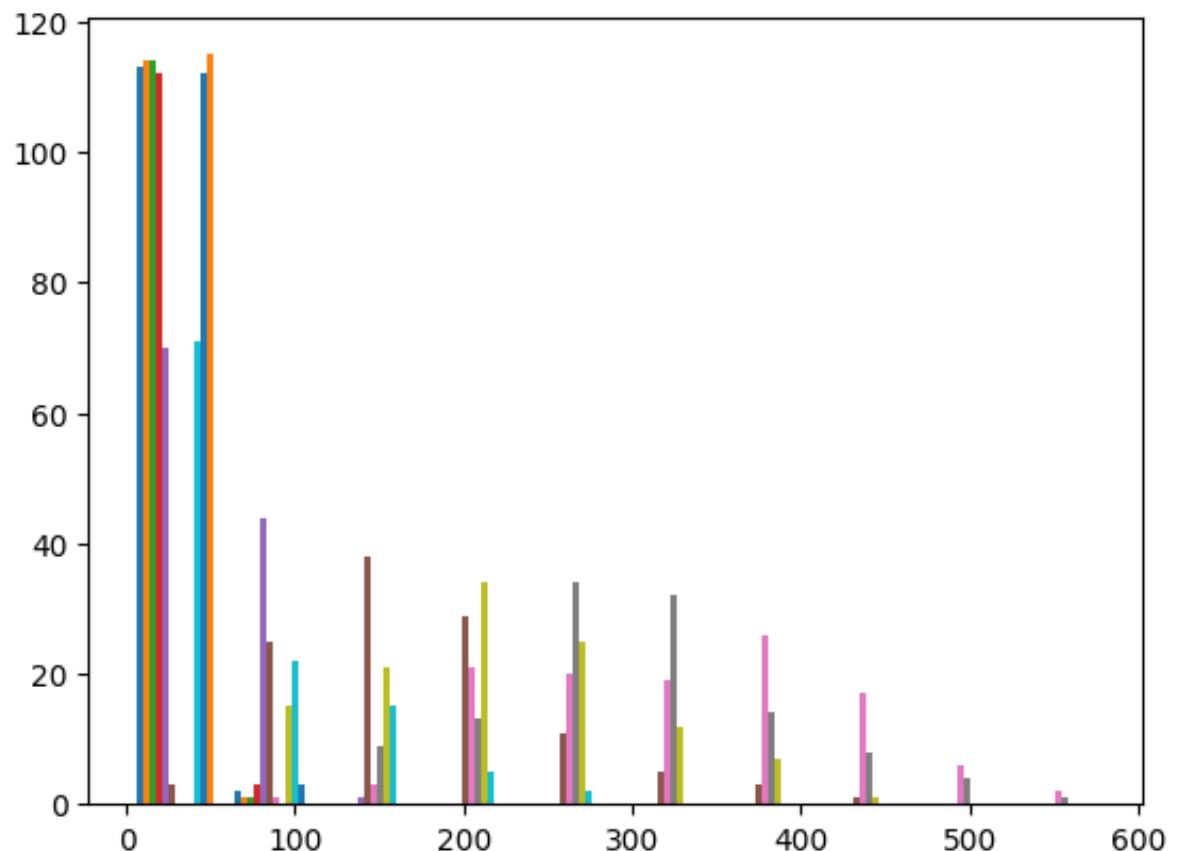
```
Out[287]: <Axes: xlabel='YEAR'>
```



```
In [288]: plt.hist(y)
```

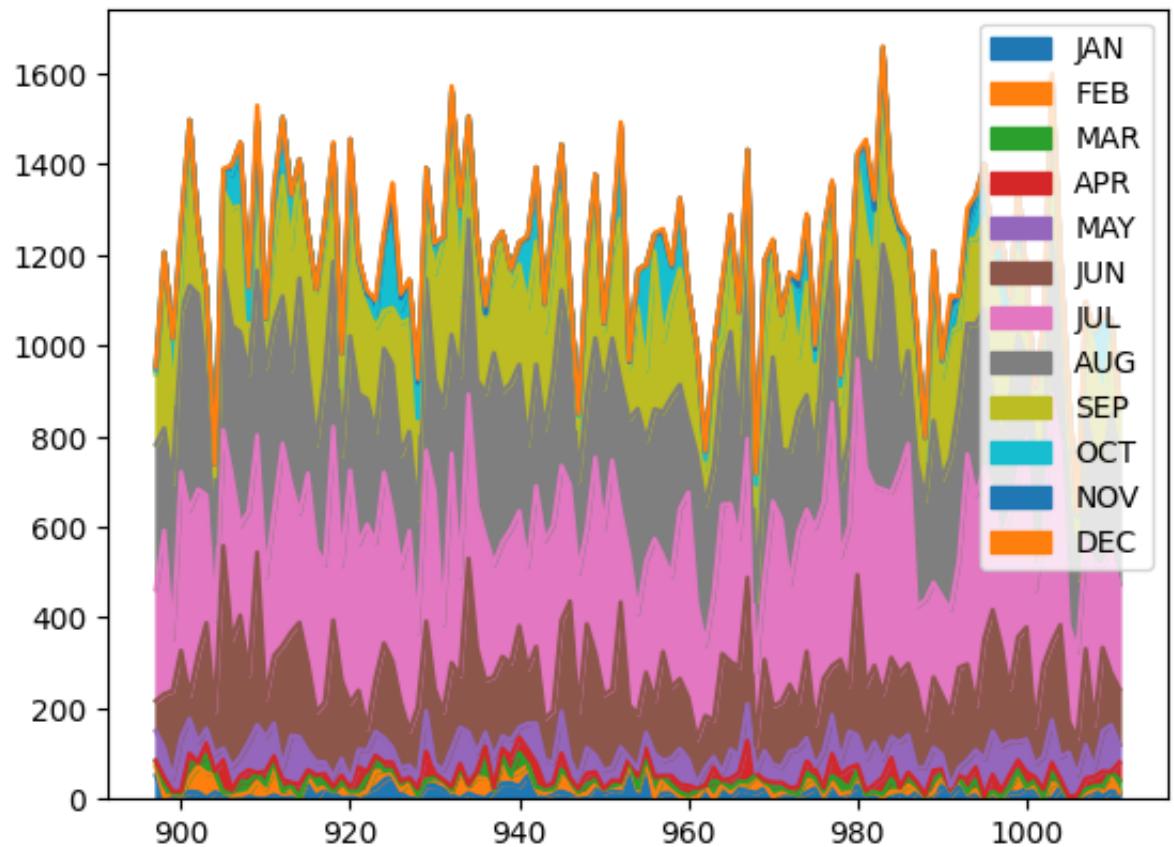
```
Out[288]: (array([[113., 2., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
       [114., 1., 0., 0., 0., 0., 0., 0., 0., 0., 0.],
       [114., 1., 0., 0., 0., 0., 0., 0., 0., 0., 0.],
       [112., 3., 0., 0., 0., 0., 0., 0., 0., 0., 0.],
       [70., 44., 1., 0., 0., 0., 0., 0., 0., 0., 0.],
       [3., 25., 38., 29., 11., 5., 3., 1., 0., 0., 0.],
       [0., 1., 3., 21., 20., 19., 26., 17., 6., 2.],
       [0., 0., 9., 13., 34., 32., 14., 8., 4., 1.],
       [0., 15., 21., 34., 25., 12., 7., 1., 0., 0.],
       [71., 22., 15., 5., 2., 0., 0., 0., 0., 0.],
       [0.],
```

```
[112.,   3.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,
0.],  
[115.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,   0.,
0.]),  
array([  0. ,  58.01, 116.02, 174.03, 232.04, 290.05, 348.06, 40
6.07,
        464.08, 522.09, 580.1 ]),  
<a list of 12 BarContainer objects>)
```



In [289]: `y.plot.area()`

Out[289]: <Axes: >



JHARKHAND

In [297]: `x=df[df["SUBDIVISION"]=="JHARKHAND"]`

X

Out[297]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
782	782	JHARKHAND	1901	92.7	66.6	11.1	18.4	33.5	70.9	269.4	415.1	248.0
783	783	JHARKHAND	1902	4.2	7.7	13.2	28.5	59.8	89.9	456.1	204.9	306.6
784	784	JHARKHAND	1903	25.1	19.5	10.7	32.8	56.4	142.1	206.1	280.8	190.2
785	785	JHARKHAND	1904	2.5	17.0	38.1	9.1	116.1	308.9	494.1	336.1	125.6
786	786	JHARKHAND	1905	38.4	53.3	61.6	32.9	66.2	41.5	420.3	293.7	322.8
...
892	892	JHARKHAND	2011	3.3	2.5	6.4	25.4	55.0	349.0	181.8	403.2	324.6
893	893	JHARKHAND	2012	34.6	10.3	1.5	9.6	6.6	121.1	287.2	282.4	217.6
894	894	JHARKHAND	2013	1.1	17.9	1.6	22.3	85.0	181.5	211.1	278.1	173.8
895	895	JHARKHAND	2014	9.9	47.5	22.9	1.9	98.2	139.7	321.3	290.9	178.2
896	896	JHARKHAND	2015	12.2	2.6	21.6	55.5	25.5	183.3	429.7	240.7	85.1

115 rows × 20 columns

In [298]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–A"])`

Out[298]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	A
782	1901	92.7	66.6	11.1	18.4	33.5	70.9	269.4	415.1	248.0	37.3	11.5	0.0	
783	1902	4.2	7.7	13.2	28.5	59.8	89.9	456.1	204.9	306.6	17.6	5.9	3.2	
784	1903	25.1	19.5	10.7	32.8	56.4	142.1	206.1	280.8	190.2	210.1	0.5	0.0	
785	1904	2.5	17.0	38.1	9.1	116.1	308.9	494.1	336.1	125.6	30.6	2.3	0.4	
786	1905	38.4	53.3	61.6	32.9	66.2	41.5	420.3	293.7	322.8	21.3	0.0	2.7	
...	
892	2011	3.3	2.5	6.4	25.4	55.0	349.0	181.8	403.2	324.6	23.3	0.0	0.1	
893	2012	34.6	10.3	1.5	9.6	6.6	121.1	287.2	282.4	217.6	37.8	48.6	7.6	
894	2013	1.1	17.9	1.6	22.3	85.0	181.5	211.1	278.1	173.8	281.1	0.0	0.0	
895	2014	9.9	47.5	22.9	1.9	98.2	139.7	321.3	290.9	178.2	44.9	0.0	1.2	
896	2015	12.2	2.6	21.6	55.5	25.5	183.3	429.7	240.7	85.1	22.7	0.2	2.7	

115 rows × 14 columns

In [299]:

```
y=x.drop(["YEAR","ANNUAL"],axis=1)  
y
```

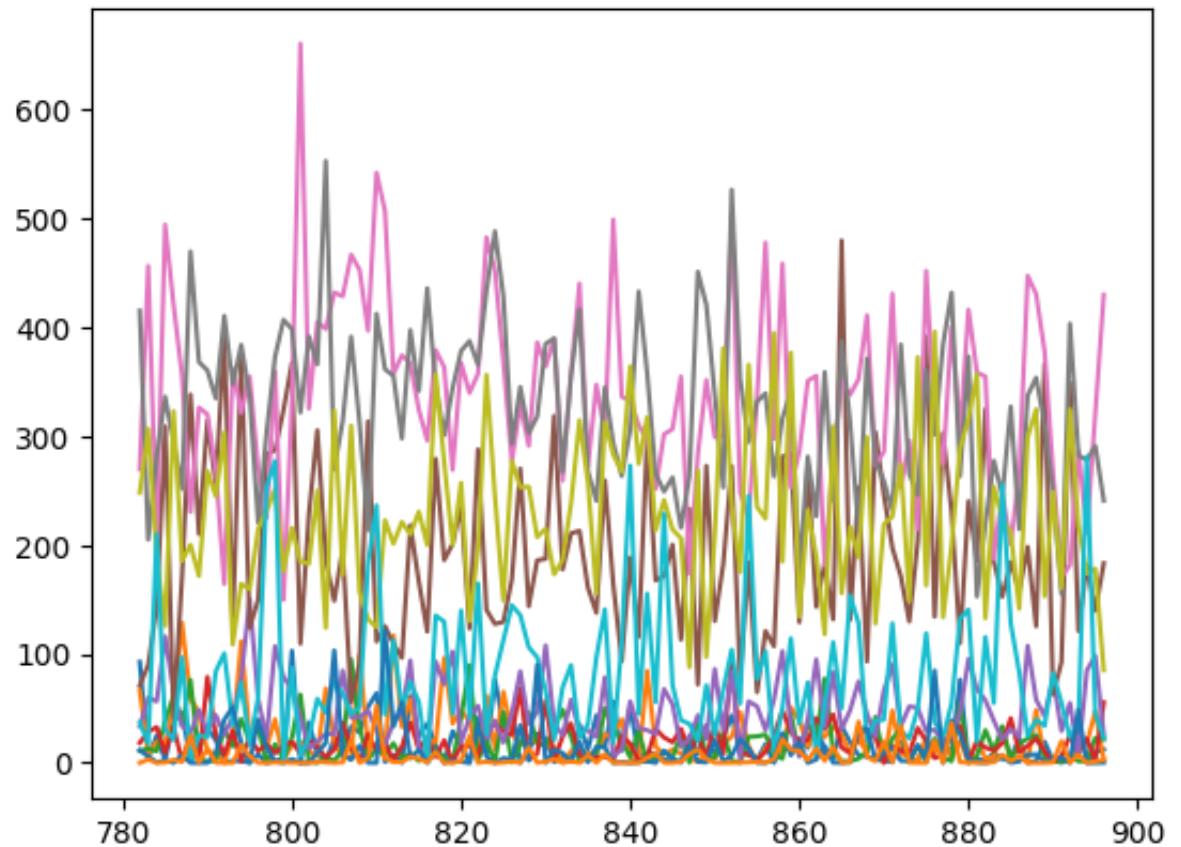
Out[299]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
782	92.7	66.6	11.1	18.4	33.5	70.9	269.4	415.1	248.0	37.3	11.5	0.0
783	4.2	7.7	13.2	28.5	59.8	89.9	456.1	204.9	306.6	17.6	5.9	3.2
784	25.1	19.5	10.7	32.8	56.4	142.1	206.1	280.8	190.2	210.1	0.5	0.0
785	2.5	17.0	38.1	9.1	116.1	308.9	494.1	336.1	125.6	30.6	2.3	0.4
786	38.4	53.3	61.6	32.9	66.2	41.5	420.3	293.7	322.8	21.3	0.0	2.7
...
892	3.3	2.5	6.4	25.4	55.0	349.0	181.8	403.2	324.6	23.3	0.0	0.1
893	34.6	10.3	1.5	9.6	6.6	121.1	287.2	282.4	217.6	37.8	48.6	7.6
894	1.1	17.9	1.6	22.3	85.0	181.5	211.1	278.1	173.8	281.1	0.0	0.0
895	9.9	47.5	22.9	1.9	98.2	139.7	321.3	290.9	178.2	44.9	0.0	1.2
896	12.2	2.6	21.6	55.5	25.5	183.3	429.7	240.7	85.1	22.7	0.2	2.7

115 rows × 12 columns

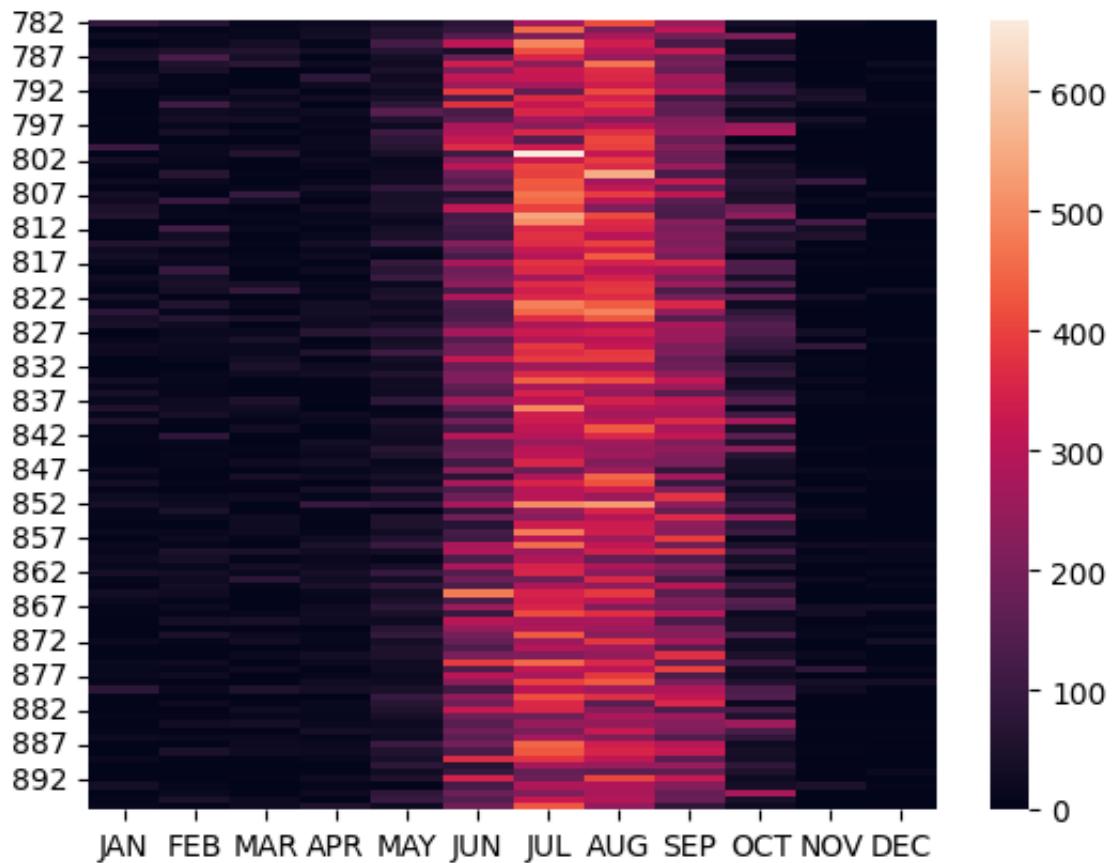
```
In [300]: plt.plot(y)
```

```
Out[300]: [<matplotlib.lines.Line2D at 0x26dadefadd0>,
 <matplotlib.lines.Line2D at 0x26dadbae210>,
 <matplotlib.lines.Line2D at 0x26dadf8eb90>,
 <matplotlib.lines.Line2D at 0x26dadf8e2d0>,
 <matplotlib.lines.Line2D at 0x26dadf8c910>,
 <matplotlib.lines.Line2D at 0x26dadf8cd90>,
 <matplotlib.lines.Line2D at 0x26dadf8c150>,
 <matplotlib.lines.Line2D at 0x26dadf8cf10>,
 <matplotlib.lines.Line2D at 0x26dadf8d790>,
 <matplotlib.lines.Line2D at 0x26dae0feb50>,
 <matplotlib.lines.Line2D at 0x26dadfc80d0>,
 <matplotlib.lines.Line2D at 0x26dae0fef50>]
```



In [301]: `sns.heatmap(y)`

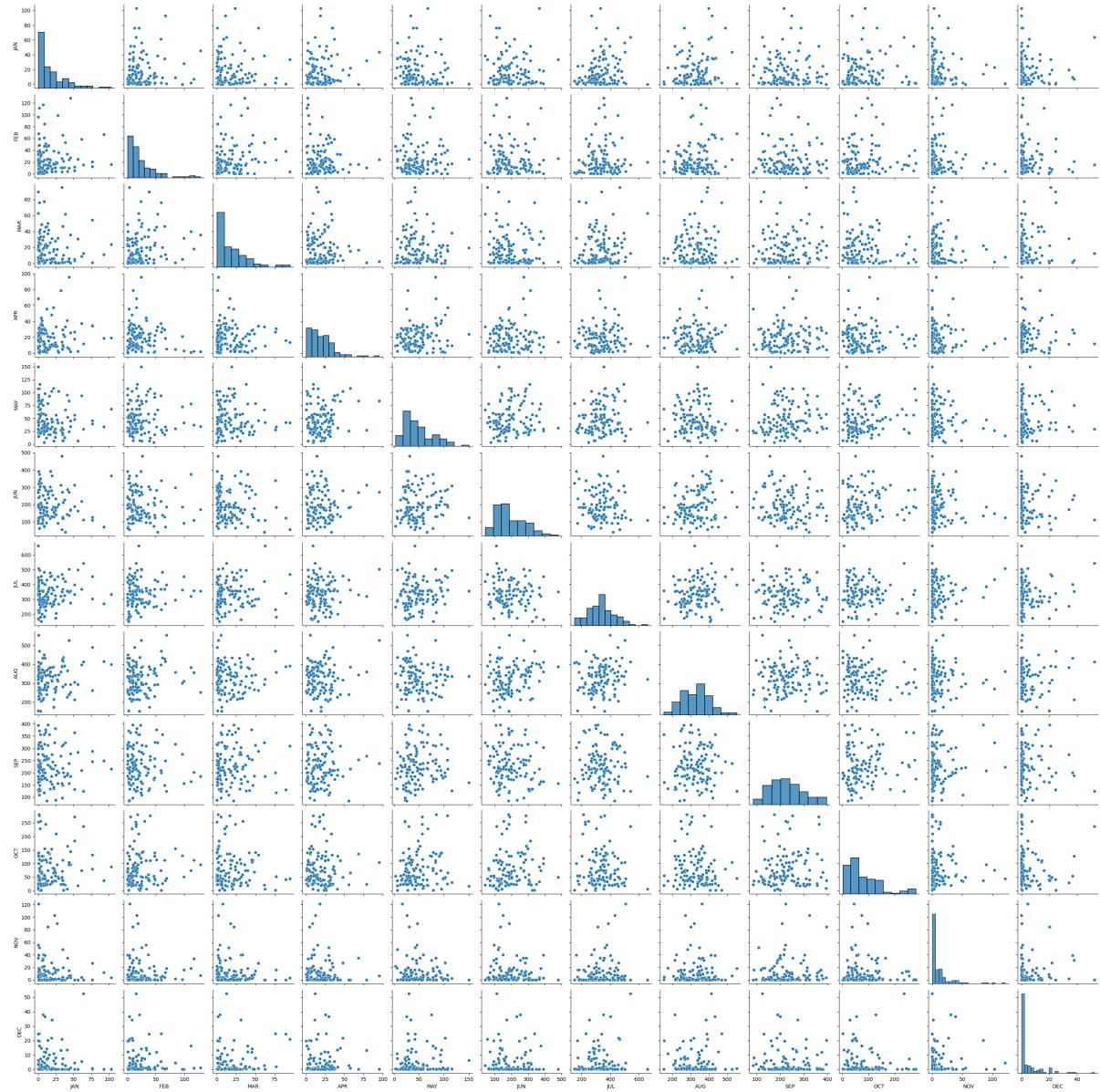
Out[301]: <Axes: >



In [302]: `sns.pairplot(y)`

```
C:\Users\Gokul Jana\AppData\Local\Programs\Python\Python311\Lib\site-packages\seaborn\axisgrid.py:118: UserWarning: The figure layout has changed to tight
    self._figure.tight_layout(*args, **kwargs)
```

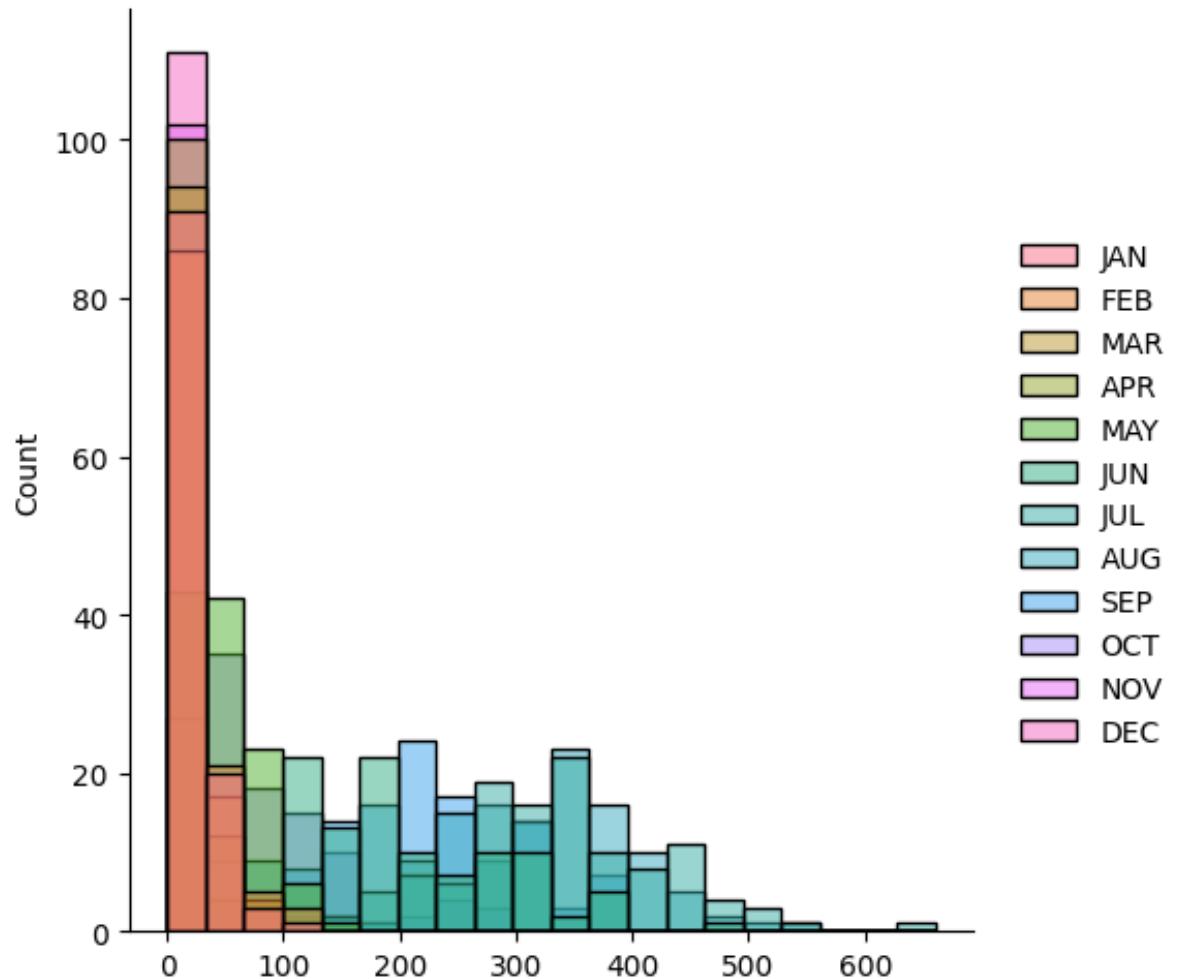
Out[302]: <seaborn.axisgrid.PairGrid at 0x26dade35990>



In [303]: `sns.displot(y)`

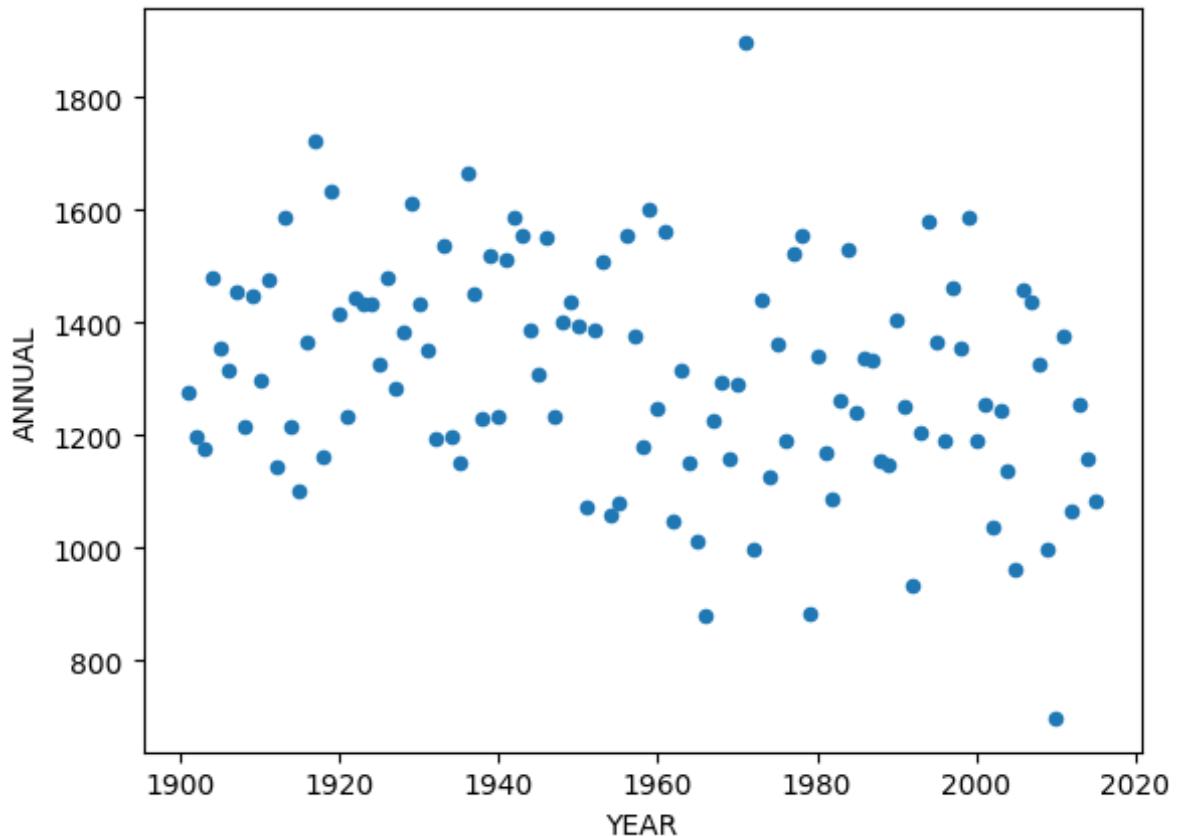
```
C:\Users\Gokul Jana\AppData\Local\Programs\Python\Python311\Lib\site-packages\seaborn\axisgrid.py:118: UserWarning: The figure layout has changed to tight
    self._figure.tight_layout(*args, **kwargs)
```

Out[303]: <seaborn.axisgrid.FacetGrid at 0x26db7edd410>



```
In [304]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

```
Out[304]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



ORISSA

In [305]: `x=df[df["SUBDIVISION"]=="ORISSA"]`

`x`

Out[305]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
667	667	ORISSA	1901	39.5	65.1	16.1	51.6	79.0	78.2	288.4	307.7	185.3
668	668	ORISSA	1902	3.4	0.2	14.2	101.1	56.7	108.3	437.4	349.1	202.7
669	669	ORISSA	1903	19.7	18.9	10.5	34.6	73.3	154.3	410.4	295.2	265.6
670	670	ORISSA	1904	0.2	12.2	20.6	10.1	100.2	342.9	336.7	350.4	227.8
671	671	ORISSA	1905	24.3	17.2	66.3	56.9	107.5	92.0	330.1	281.4	344.1
...
777	777	ORISSA	2011	3.7	16.2	4.9	58.2	75.6	210.1	199.6	358.6	398.7
778	778	ORISSA	2012	50.8	3.6	0.9	34.8	21.3	169.6	324.3	417.0	242.4
779	779	ORISSA	2013	3.3	7.8	2.1	53.6	57.7	272.6	380.0	254.9	208.1
780	780	ORISSA	2014	0.0	17.6	25.1	11.7	111.9	92.2	496.2	386.3	281.1
781	781	ORISSA	2015	15.1	3.3	10.5	67.6	32.6	238.6	294.8	264.0	237.0

115 rows × 20 columns

In [306]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–Dec"])`

Out[306]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	/
667	1901	39.5	65.1	16.1	51.6	79.0	78.2	288.4	307.7	185.3	76.6	96.7	0.0	
668	1902	3.4	0.2	14.2	101.1	56.7	108.3	437.4	349.1	202.7	33.2	13.0	29.6	
669	1903	19.7	18.9	10.5	34.6	73.3	154.3	410.4	295.2	265.6	228.5	46.2	11.0	
670	1904	0.2	12.2	20.6	10.1	100.2	342.9	336.7	350.4	227.8	111.8	0.0	1.9	
671	1905	24.3	17.2	66.3	56.9	107.5	92.0	330.1	281.4	344.1	36.4	0.7	0.4	
...	
777	2011	3.7	16.2	4.9	58.2	75.6	210.1	199.6	358.6	398.7	20.2	0.1	0.4	
778	2012	50.8	3.6	0.9	34.8	21.3	169.6	324.3	417.0	242.4	66.0	72.1	3.1	
779	2013	3.3	7.8	2.1	53.6	57.7	272.6	380.0	254.9	208.1	391.0	1.2	0.0	
780	2014	0.0	17.6	25.1	11.7	111.9	92.2	496.2	386.3	281.1	111.8	2.2	0.9	
781	2015	15.1	3.3	10.5	67.6	32.6	238.6	294.8	264.0	237.0	24.7	6.2	15.6	

115 rows × 14 columns

In [307]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
`y`

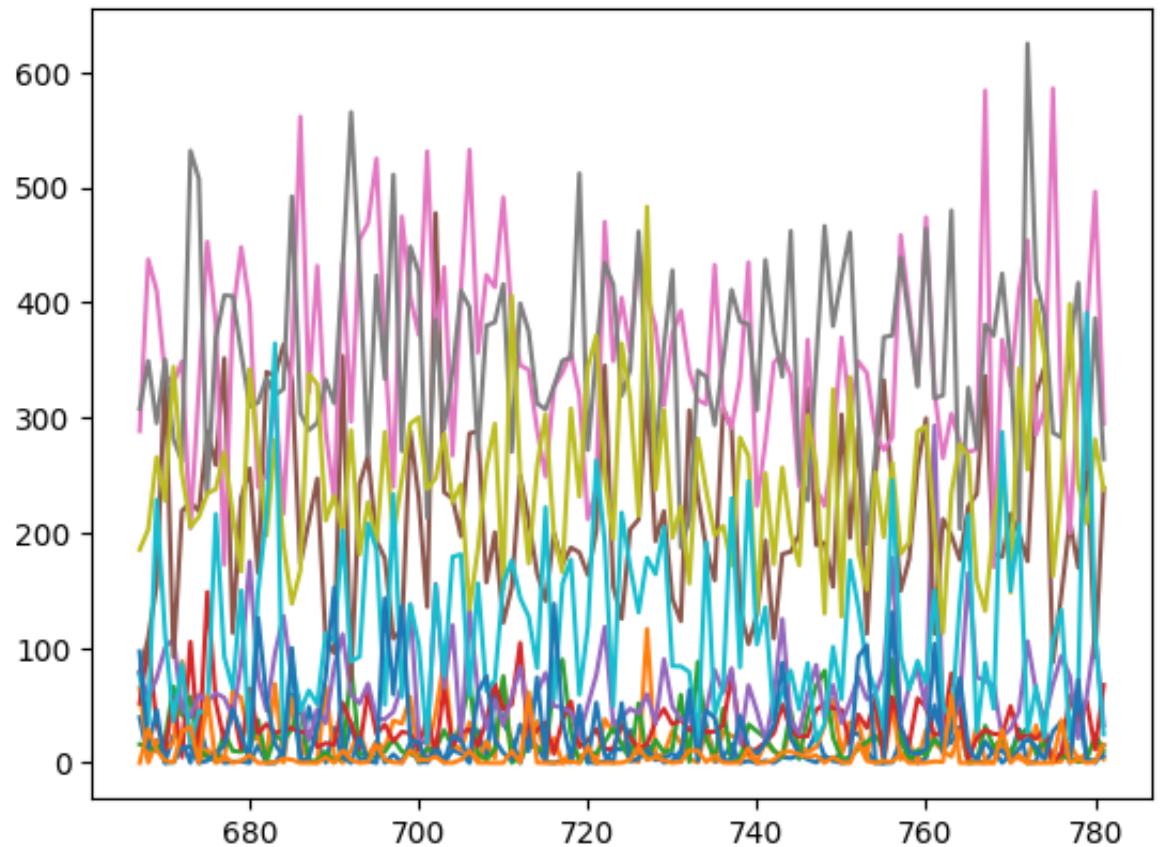
Out[307]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
667	39.5	65.1	16.1	51.6	79.0	78.2	288.4	307.7	185.3	76.6	96.7	0.0
668	3.4	0.2	14.2	101.1	56.7	108.3	437.4	349.1	202.7	33.2	13.0	29.6
669	19.7	18.9	10.5	34.6	73.3	154.3	410.4	295.2	265.6	228.5	46.2	11.0
670	0.2	12.2	20.6	10.1	100.2	342.9	336.7	350.4	227.8	111.8	0.0	1.9
671	24.3	17.2	66.3	56.9	107.5	92.0	330.1	281.4	344.1	36.4	0.7	0.4
...
777	3.7	16.2	4.9	58.2	75.6	210.1	199.6	358.6	398.7	20.2	0.1	0.4
778	50.8	3.6	0.9	34.8	21.3	169.6	324.3	417.0	242.4	66.0	72.1	3.1
779	3.3	7.8	2.1	53.6	57.7	272.6	380.0	254.9	208.1	391.0	1.2	0.0
780	0.0	17.6	25.1	11.7	111.9	92.2	496.2	386.3	281.1	111.8	2.2	0.9
781	15.1	3.3	10.5	67.6	32.6	238.6	294.8	264.0	237.0	24.7	6.2	15.6

115 rows × 12 columns

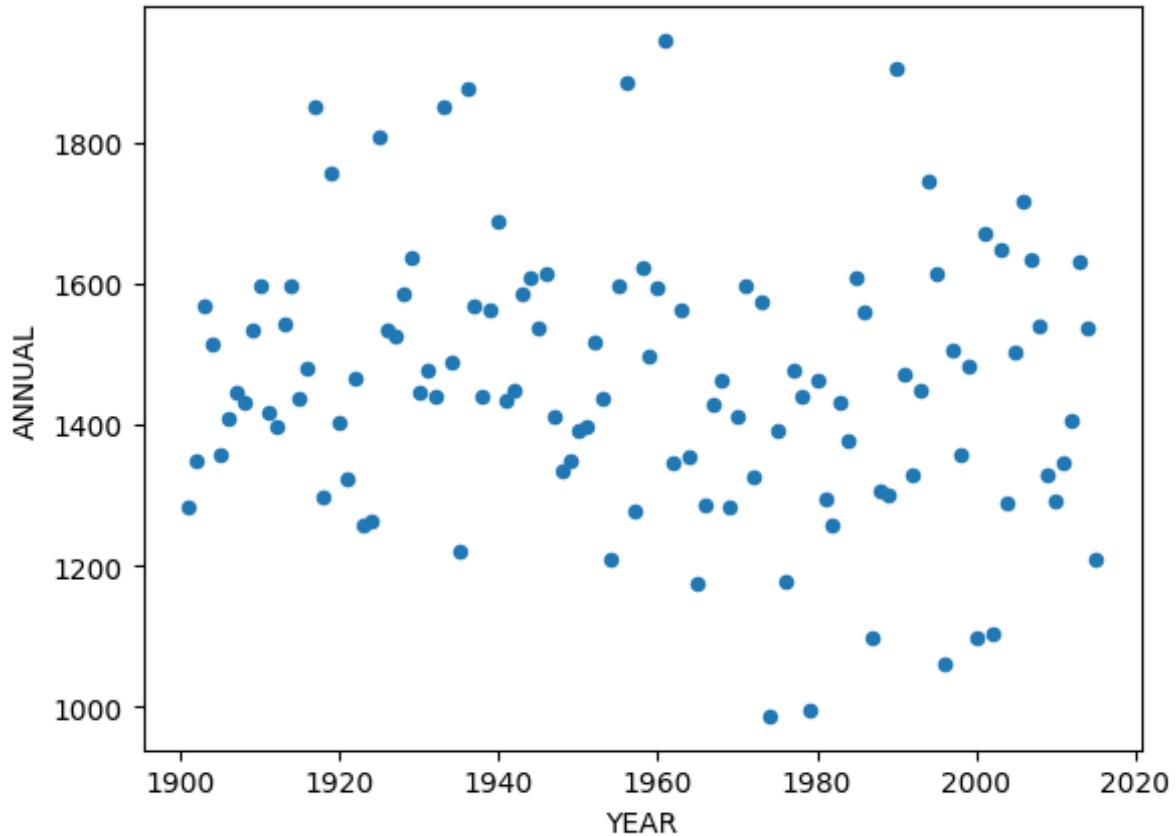
```
In [308]: plt.plot(y)
```

```
Out[308]: [
```



```
In [309]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

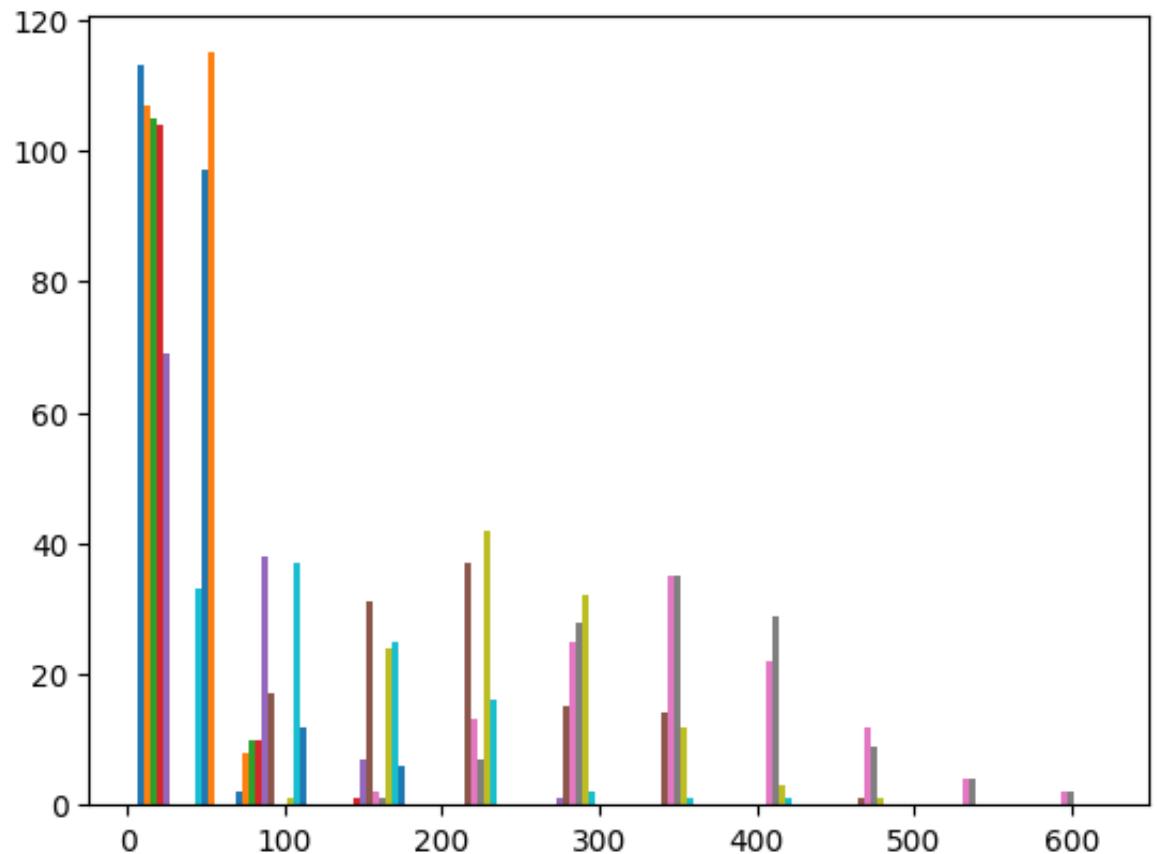
```
Out[309]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [310]: plt.hist(y)
```

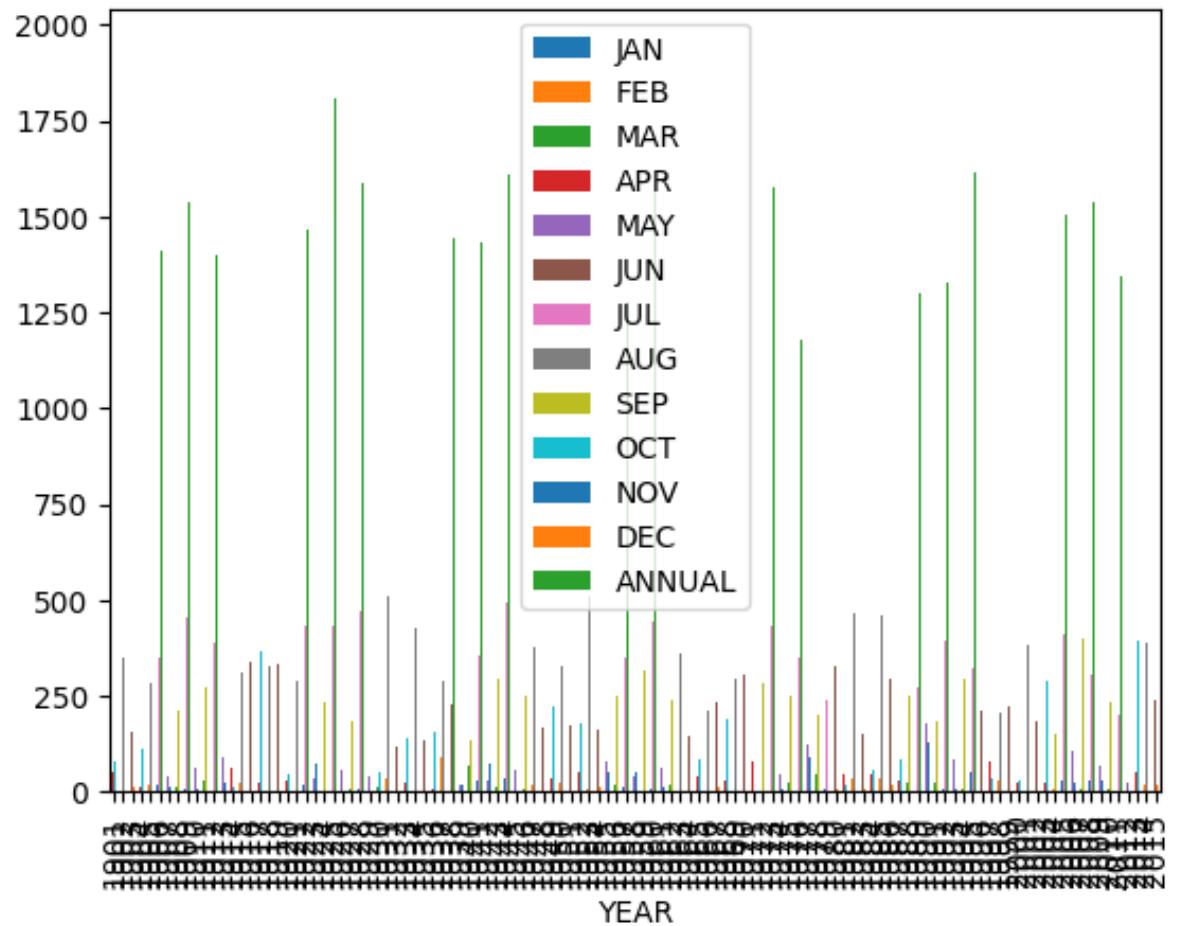
```
Out[310]: (array([[113.,  2.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [107.,  8.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [105., 10.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [104., 10.,  1.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [ 69., 38.,  7.,  0.,  1.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [  0., 17., 31., 37., 15., 14.,  0.,  1.,  0.,  0.,
       0.],
      [  0.,  0.,  2., 13., 25., 35., 22., 12.,  4.,  0.,
       0.],
      [  0.,  0.,  1.,  7., 28., 35., 29.,  9.,  4.,  0.,
       0.],
      [  0.,  1., 24., 42., 32., 12.,  3.,  1.,  0.,  0.,
       0.],
      [ 33., 37., 25., 16.,  2.,  1.,  1.,  0.,  0.,  0.,
       0.],
      [ 97., 12.,  6.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
       0.],
      [115,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0,
       0]]),
```

```
[11]: [0., 62.49, 124.98, 187.47, 249.96, 312.45, 374.94, 43  
7.43,  
     499.92, 562.41, 624.9]),  
<a list of 12 BarContainer objects>)
```



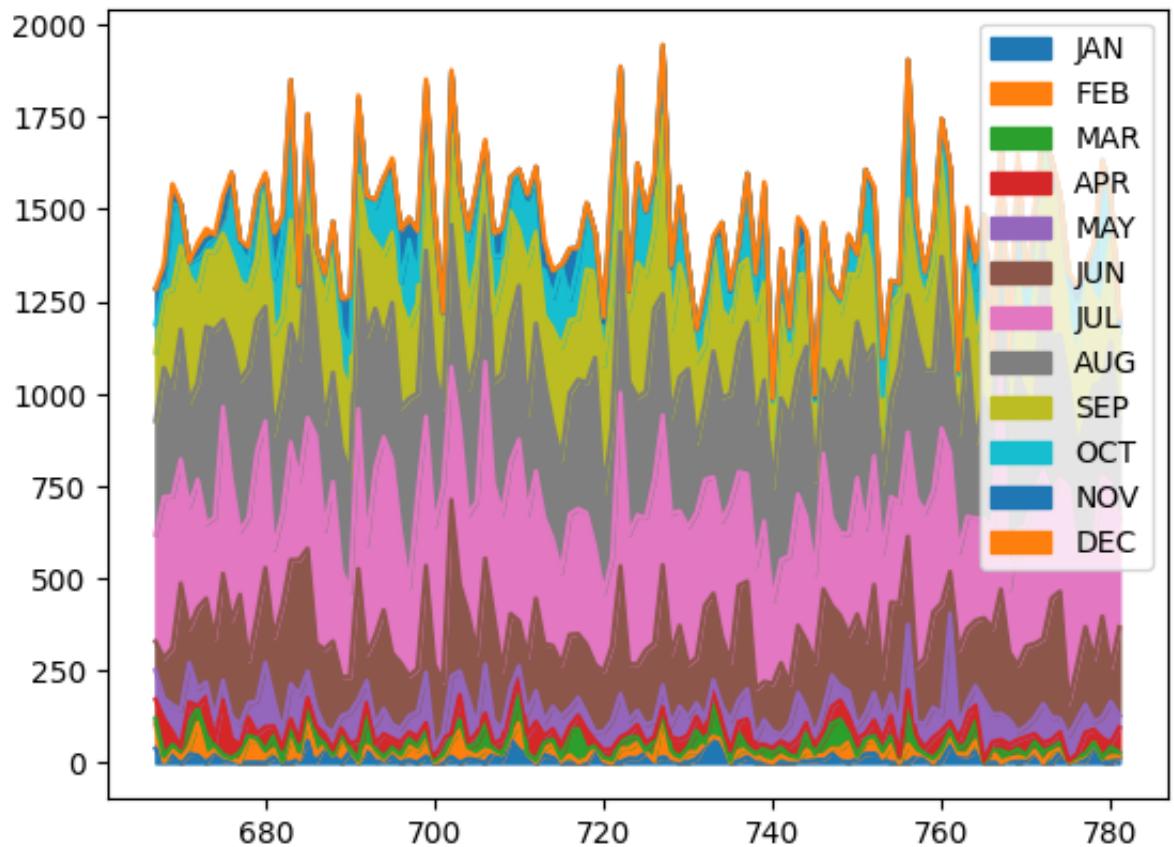
```
In [311]: x.plot.bar(x="YEAR")
```

```
Out[311]: <Axes: xlabel='YEAR'>
```



In [312]: `y.plot.area()`

Out[312]: <Axes: >



GANGETIC WEST BENGAL

In [313]: `x=df[df["SUBDIVISION"]=="GANGETIC WEST BENGAL"]
x`

Out[313]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
552	552	GANGETIC WEST BENGAL	1901	37.1	58.4	3.9	64.1	121.7	198.0	280.8	275.7	313.5
553	553	GANGETIC WEST BENGAL	1902	0.0	1.2	44.2	103.8	161.6	140.9	347.8	264.8	230.5
554	554	GANGETIC WEST BENGAL	1903	17.5	24.6	37.3	30.6	78.5	201.7	179.6	277.6	300.7
555	555	GANGETIC WEST BENGAL	1904	0.1	23.9	35.6	17.5	160.2	286.7	435.3	241.7	142.8
556	556	GANGETIC WEST BENGAL	1905	30.9	49.6	84.7	84.9	156.8	70.9	525.5	263.6	287.6
...
662	662	GANGETIC WEST BENGAL	2011	2.5	2.7	40.5	75.0	132.6	434.5	219.9	443.2	295.9
663	663	GANGETIC WEST BENGAL	2012	40.7	15.3	4.4	57.7	44.2	146.6	315.0	261.4	246.9
664	664	GANGETIC WEST BENGAL	2013	2.5	10.0	4.8	45.6	195.9	233.4	263.2	401.4	254.0
665	665	GANGETIC WEST BENGAL	2014	0.9	42.2	19.9	1.9	124.4	193.6	298.7	292.6	229.5
666	666	GANGETIC WEST BENGAL	2015	12.9	5.5	19.3	88.7	57.6	247.2	633.1	260.6	164.0

115 rows × 20 columns

In [314]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X"])`

Out[314]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
552	1901	37.1	58.4	3.9	64.1	121.7	198.0	280.8	275.7	313.5	51.1	83.4	0.0
553	1902	0.0	1.2	44.2	103.8	161.6	140.9	347.8	264.8	230.5	32.5	10.4	9.9
554	1903	17.5	24.6	37.3	30.6	78.5	201.7	179.6	277.6	300.7	198.0	8.2	0.0
555	1904	0.1	23.9	35.6	17.5	160.2	286.7	435.3	241.7	142.8	35.1	4.1	0.1
556	1905	30.9	49.6	84.7	84.9	156.8	70.9	525.5	263.6	287.6	107.3	0.0	5.2
...
662	2011	2.5	2.7	40.5	75.0	132.6	434.5	219.9	443.2	295.9	36.9	1.3	1.4
663	2012	40.7	15.3	4.4	57.7	44.2	146.6	315.0	261.4	246.9	64.2	47.0	24.6
664	2013	2.5	10.0	4.8	45.6	195.9	233.4	263.2	401.4	254.0	353.2	0.0	0.0
665	2014	0.9	42.2	19.9	1.9	124.4	193.6	298.7	292.6	229.5	56.9	0.1	0.6
666	2015	12.9	5.5	19.3	88.7	57.6	247.2	633.1	260.6	164.0	32.7	2.3	6.3

115 rows × 14 columns

In [315]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

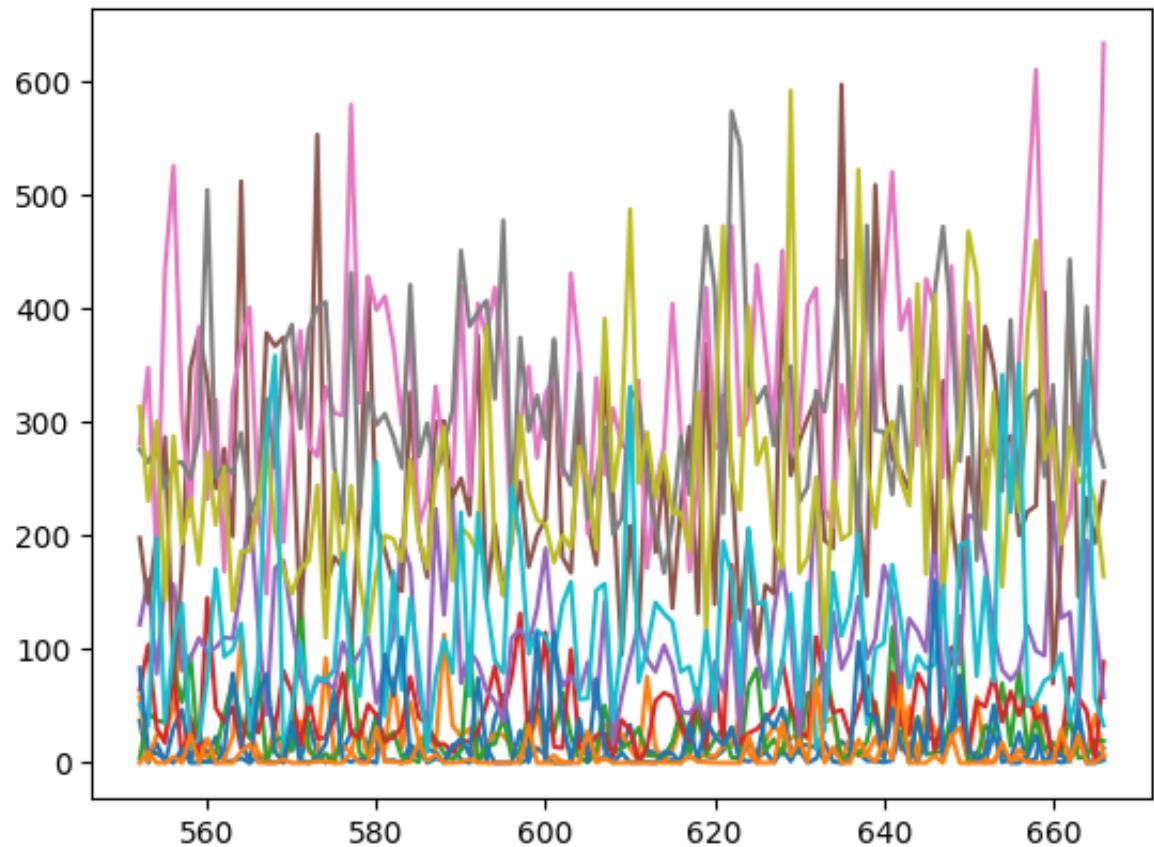
Out[315]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
552	37.1	58.4	3.9	64.1	121.7	198.0	280.8	275.7	313.5	51.1	83.4	0.0
553	0.0	1.2	44.2	103.8	161.6	140.9	347.8	264.8	230.5	32.5	10.4	9.9
554	17.5	24.6	37.3	30.6	78.5	201.7	179.6	277.6	300.7	198.0	8.2	0.0
555	0.1	23.9	35.6	17.5	160.2	286.7	435.3	241.7	142.8	35.1	4.1	0.1
556	30.9	49.6	84.7	84.9	156.8	70.9	525.5	263.6	287.6	107.3	0.0	5.2
...
662	2.5	2.7	40.5	75.0	132.6	434.5	219.9	443.2	295.9	36.9	1.3	1.4
663	40.7	15.3	4.4	57.7	44.2	146.6	315.0	261.4	246.9	64.2	47.0	24.6
664	2.5	10.0	4.8	45.6	195.9	233.4	263.2	401.4	254.0	353.2	0.0	0.0
665	0.9	42.2	19.9	1.9	124.4	193.6	298.7	292.6	229.5	56.9	0.1	0.6
666	12.9	5.5	19.3	88.7	57.6	247.2	633.1	260.6	164.0	32.7	2.3	6.3

115 rows × 12 columns

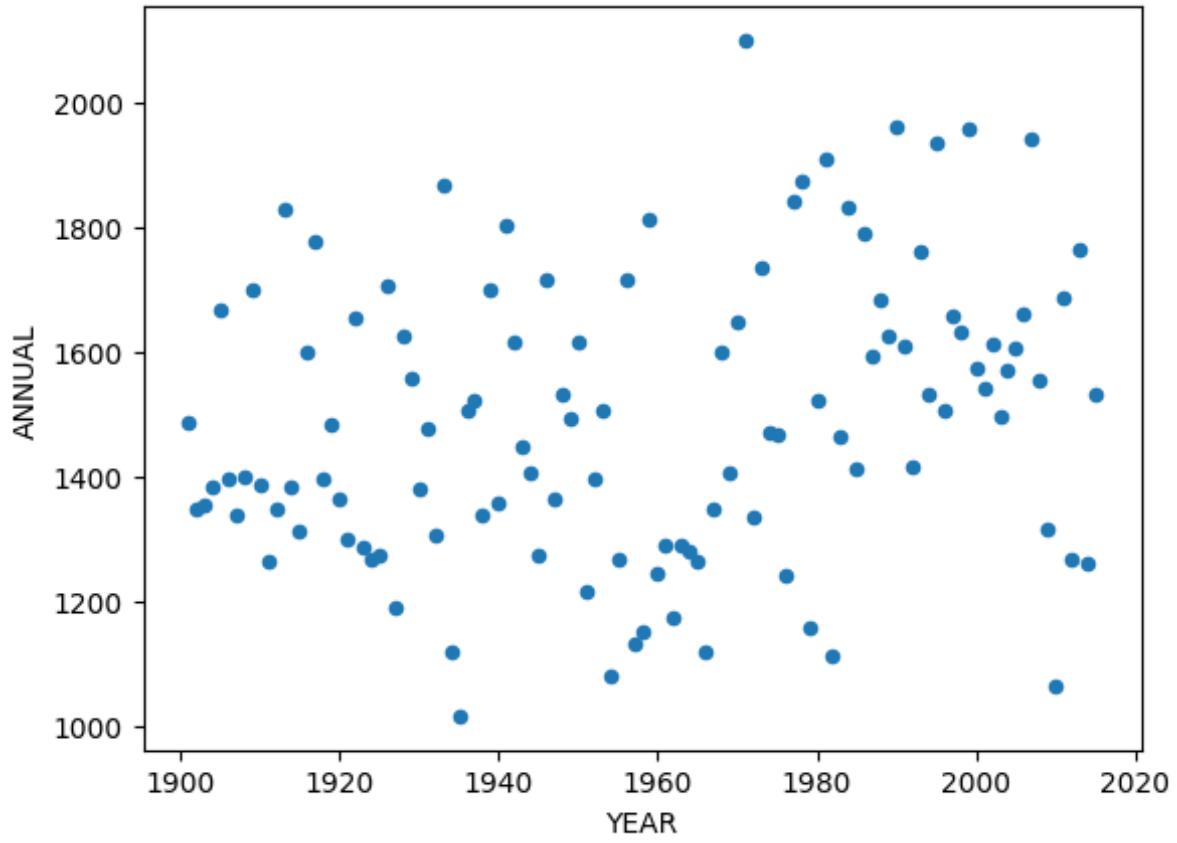
```
In [316]: plt.plot(y)
```

```
Out[316]: [<matplotlib.lines.Line2D at 0x26d9654add0>,
 <matplotlib.lines.Line2D at 0x26dbc9dfc10>,
 <matplotlib.lines.Line2D at 0x26dbc9dcf50>,
 <matplotlib.lines.Line2D at 0x26dbc9f4110>,
 <matplotlib.lines.Line2D at 0x26dbc9f4550>,
 <matplotlib.lines.Line2D at 0x26dbc9f4910>,
 <matplotlib.lines.Line2D at 0x26dbc9f4d50>,
 <matplotlib.lines.Line2D at 0x26dbc9f52d0>,
 <matplotlib.lines.Line2D at 0x26dbc9f4650>,
 <matplotlib.lines.Line2D at 0x26dbc9f4a90>,
 <matplotlib.lines.Line2D at 0x26dbc9f5d50>,
 <matplotlib.lines.Line2D at 0x26dbc9f62d0>]
```



```
In [317]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

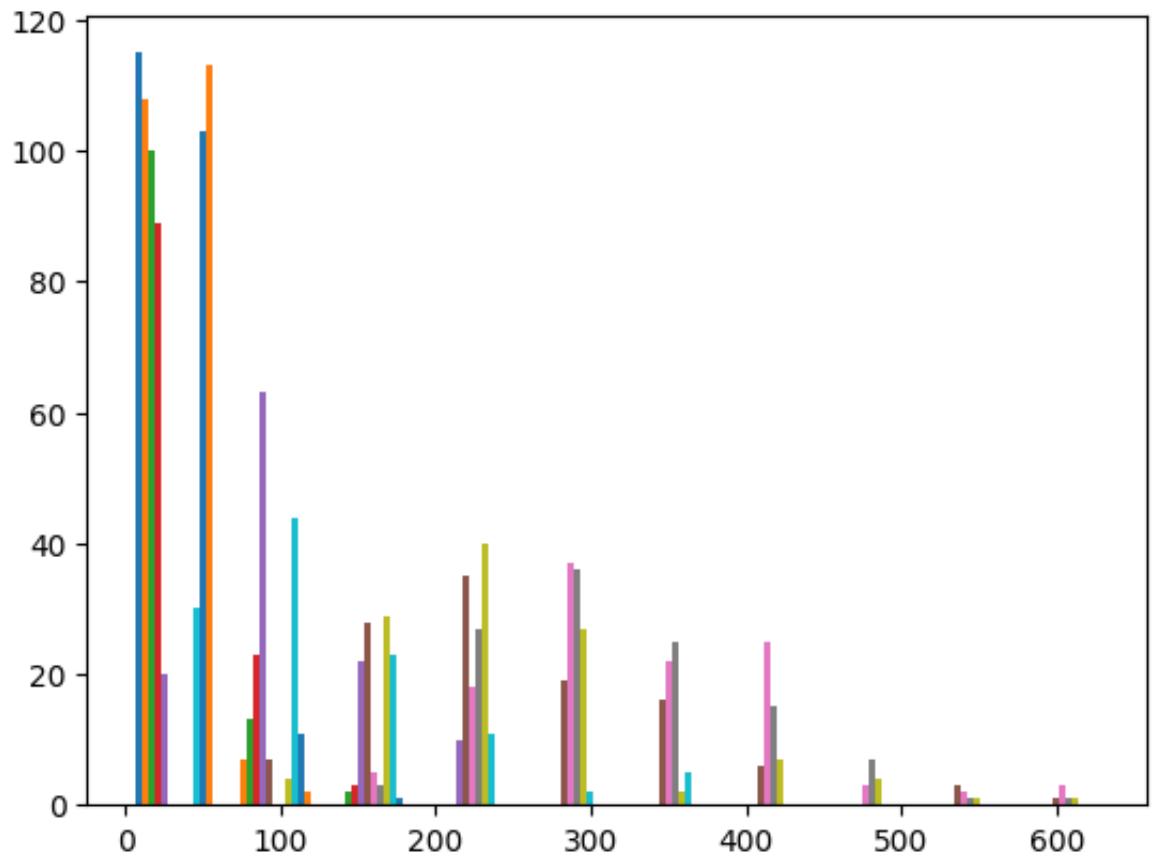
```
Out[317]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [318]: plt.hist(y)
```

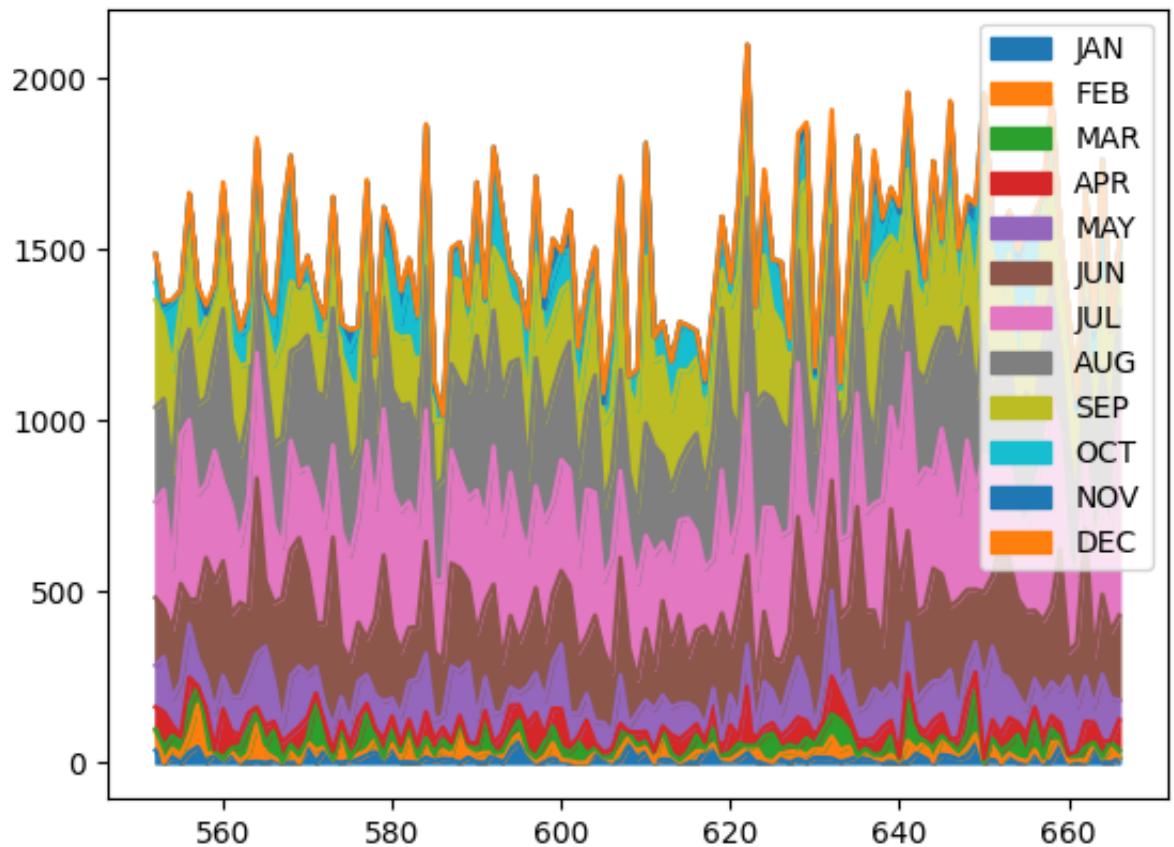
```
Out[318]: (array([[115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [108., 7., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [100., 13., 2., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [ 89., 23., 3., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [ 20., 63., 22., 10., 0., 0., 0., 0., 0., 0.,
       0.],
      [  0., 7., 28., 35., 19., 16., 6., 0., 0., 3.,
       1.],
      [  0., 0., 5., 18., 37., 22., 25., 3., 2., 0.,
       0.],
      [  0., 0., 3., 27., 36., 25., 15., 7., 1., 0.,
       0.],
      [  0., 4., 29., 40., 27., 2., 7., 4., 1., 0.,
       0.],
      [ 30., 44., 23., 11., 2., 5., 0., 0., 0., 0.,
       0.],
      [103., 11., 1., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [113., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.]])
```

```
[1155, 2., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.]),  
array([ 0. , 63.31, 126.62, 189.93, 253.24, 316.55, 379.86, 44  
3.17,  
506.48, 569.79, 633.1 ]),  
<a list of 12 BarContainer objects>)
```



In [320]: `y.plot.area()`

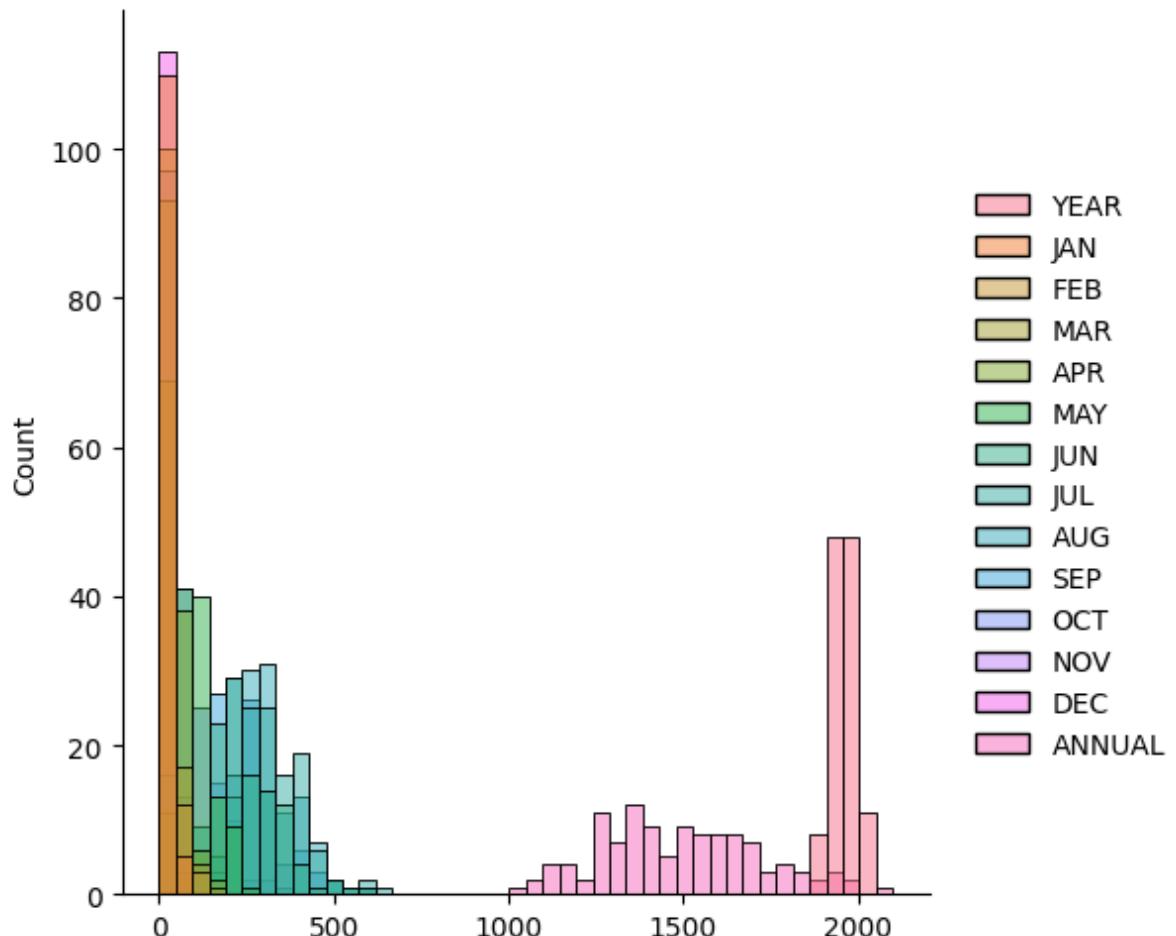
Out[320]: <Axes: >



In [321]: `sns.displot(x)`

```
C:\Users\Gokul Jana\AppData\Local\Programs\Python\Python311\Lib\site-packages\seaborn\axisgrid.py:118: UserWarning: The figure layout has changed to tight
  self._figure.tight_layout(*args, **kwargs)
```

Out[321]: <seaborn.axisgrid.FacetGrid at 0x26dbe806490>



SUB HIMALAYAN WEST BENGAL & SIKKIM

In [322]: `x=df[df["SUBDIVISION"]=="SUB HIMALAYAN WEST BENGAL & SIKKIM"]
x`

Out[322]:

		index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SE
		437	SUB HIMALAYAN WEST BENGAL & SIKKIM	1901	26.5	14.8	14.1	29.2	195.5	488.4	524.8	501.1	242.
			SUB										

438	438	HIMALAYAN WEST BENGAL & SIKKIM	1902	1.2	0.7	87.1	126.1	271.3	539.2	671.0	603.8	799.
439	439	SUB HIMALAYAN WEST BENGAL & SIKKIM	1903	5.5	8.7	19.6	18.6	163.6	541.2	431.5	708.8	365.
440	440	SUB HIMALAYAN WEST BENGAL & SIKKIM	1904	3.4	29.2	0.9	124.3	333.6	274.2	500.4	468.5	260.
441	441	SUB HIMALAYAN WEST BENGAL & SIKKIM	1905	12.0	31.2	51.9	104.4	290.6	524.8	523.1	1036.6	321.
...
547	547	SUB HIMALAYAN WEST BENGAL & SIKKIM	2011	8.5	19.9	71.2	135.0	247.8	419.8	612.3	470.3	356.
548	548	SUB HIMALAYAN WEST BENGAL & SIKKIM	2012	15.3	13.9	45.5	159.8	202.4	604.2	684.5	332.7	434.
549	549	SUB HIMALAYAN WEST BENGAL & SIKKIM	2013	3.0	23.6	32.1	114.7	296.5	404.9	588.4	416.3	308.
550	550	SUB HIMALAYAN WEST BENGAL & SIKKIM	2014	0.2	26.6	37.7	47.9	308.6	543.2	384.6	563.3	371.
551	551	SUB HIMALAYAN WEST BENGAL & SIKKIM	2015	15.7	15.0	64.8	149.0	304.6	508.2	393.3	626.6	354.

115 rows × 20 columns

In [323]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out [323]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
437	1901	26.5	14.8	14.1	29.2	195.5	488.4	524.8	501.1	242.7	55.5	17.9	2.6
438	1902	1.2	0.7	87.1	126.1	271.3	539.2	671.0	603.8	799.9	74.4	5.6	0.0
439	1903	5.5	8.7	19.6	18.6	163.6	541.2	431.5	708.8	365.2	141.3	0.3	0.0
440	1904	3.4	29.2	0.9	124.3	333.6	274.2	500.4	468.5	260.6	164.8	8.9	1.1
441	1905	12.0	31.2	51.9	104.4	290.6	524.8	523.1	1036.6	321.1	87.9	2.7	18.7
...
547	2011	8.5	19.9	71.2	135.0	247.8	419.8	612.3	470.3	356.3	46.7	26.7	4.3
548	2012	15.3	13.9	45.5	159.8	202.4	604.2	684.5	332.7	434.7	119.4	12.5	7.4
549	2013	3.0	23.6	32.1	114.7	296.5	404.9	588.4	416.3	308.0	199.8	16.1	2.7
550	2014	0.2	26.6	37.7	47.9	308.6	543.2	384.6	563.3	371.5	31.2	5.3	2.4
551	2015	15.7	15.0	64.8	149.0	304.6	508.2	393.3	626.6	354.9	53.6	23.8	9.0

115 rows × 14 columns

In [324]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

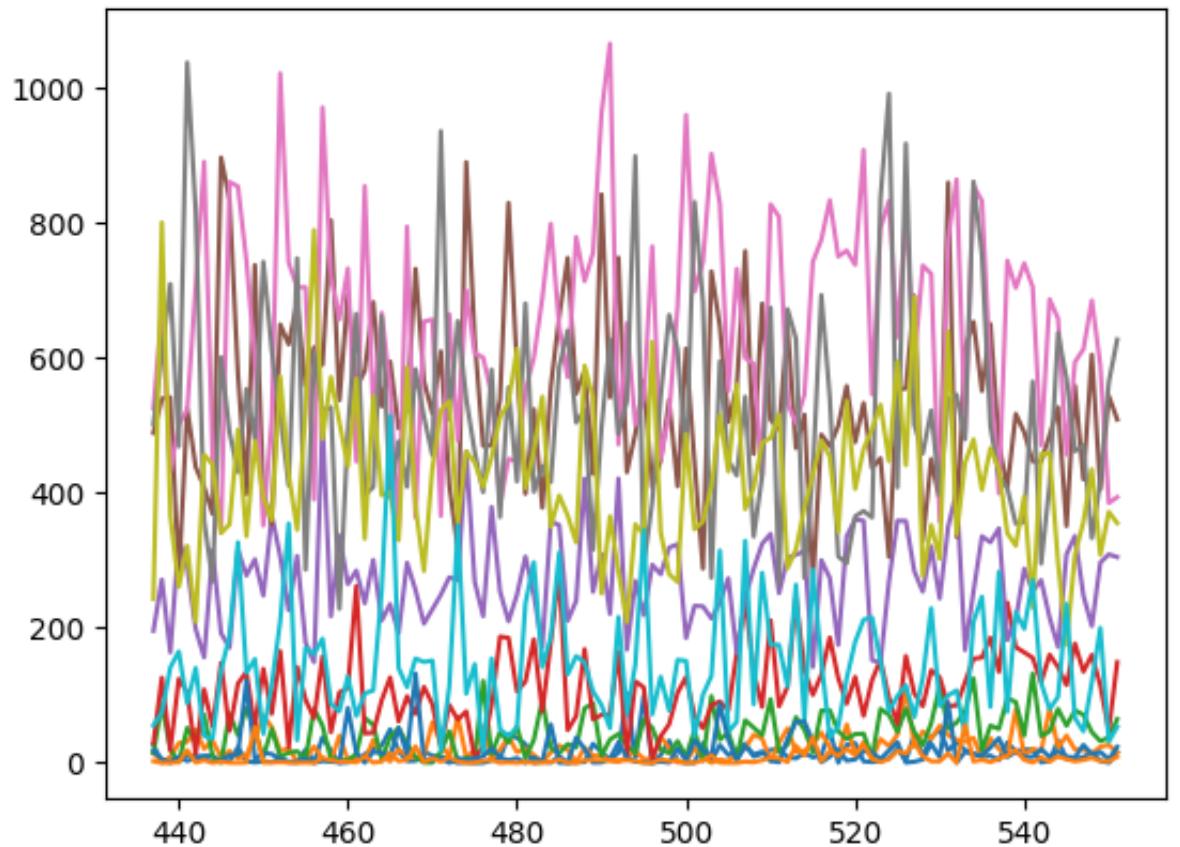
Out [324]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
437	26.5	14.8	14.1	29.2	195.5	488.4	524.8	501.1	242.7	55.5	17.9	2.6
438	1.2	0.7	87.1	126.1	271.3	539.2	671.0	603.8	799.9	74.4	5.6	0.0
439	5.5	8.7	19.6	18.6	163.6	541.2	431.5	708.8	365.2	141.3	0.3	0.0
440	3.4	29.2	0.9	124.3	333.6	274.2	500.4	468.5	260.6	164.8	8.9	1.1
441	12.0	31.2	51.9	104.4	290.6	524.8	523.1	1036.6	321.1	87.9	2.7	18.7
...
547	8.5	19.9	71.2	135.0	247.8	419.8	612.3	470.3	356.3	46.7	26.7	4.3
548	15.3	13.9	45.5	159.8	202.4	604.2	684.5	332.7	434.7	119.4	12.5	7.4
549	3.0	23.6	32.1	114.7	296.5	404.9	588.4	416.3	308.0	199.8	16.1	2.7
550	0.2	26.6	37.7	47.9	308.6	543.2	384.6	563.3	371.5	31.2	5.3	2.4
551	15.7	15.0	64.8	149.0	304.6	508.2	393.3	626.6	354.9	53.6	23.8	9.0

115 rows × 12 columns

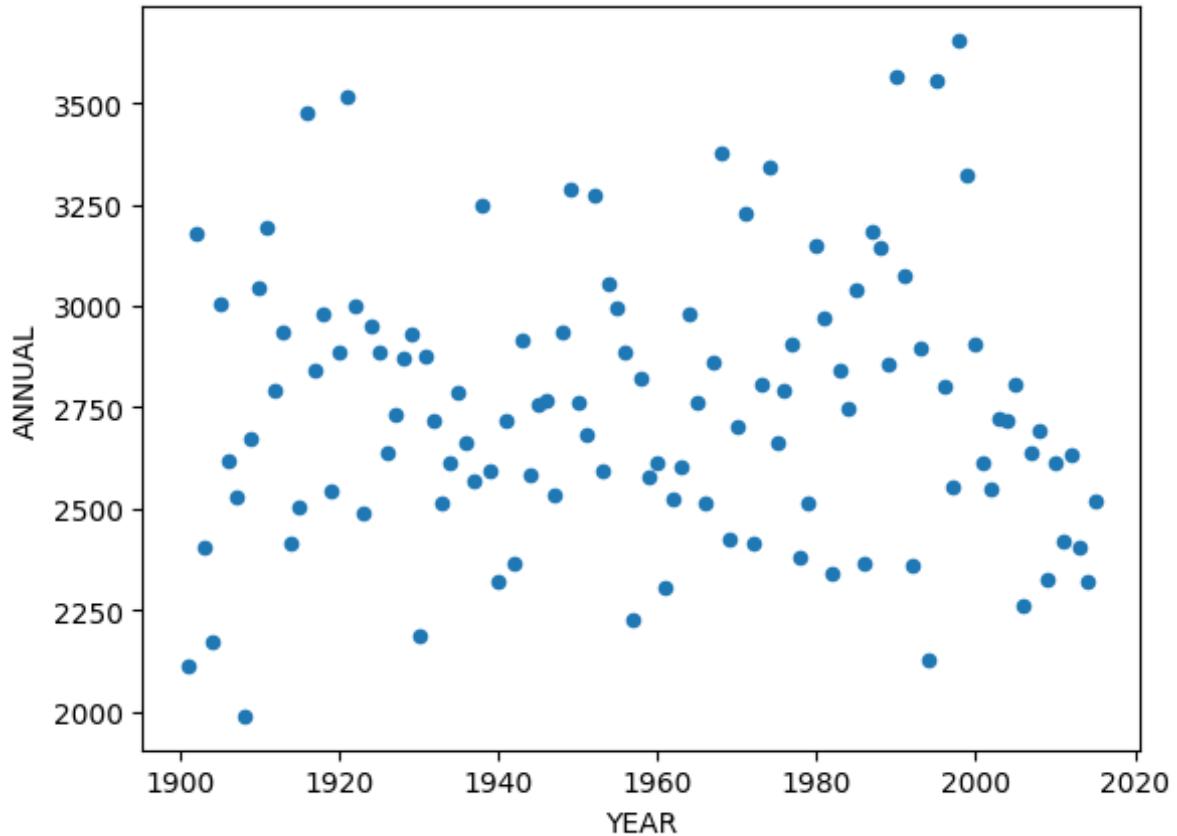
```
In [325]: plt.plot(y)
```

```
Out[325]: [<matplotlib.lines.Line2D at 0x26dbef32dd0>,
 <matplotlib.lines.Line2D at 0x26dbef27c50>,
 <matplotlib.lines.Line2D at 0x26dbef4da10>,
 <matplotlib.lines.Line2D at 0x26dbef4ddd0>,
 <matplotlib.lines.Line2D at 0x26dbef4e0d0>,
 <matplotlib.lines.Line2D at 0x26dbef4e550>,
 <matplotlib.lines.Line2D at 0x26dbef4e9d0>,
 <matplotlib.lines.Line2D at 0x26dbef4edd0>,
 <matplotlib.lines.Line2D at 0x26dbef4e1d0>,
 <matplotlib.lines.Line2D at 0x26dbef4e590>,
 <matplotlib.lines.Line2D at 0x26dbef4f850>,
 <matplotlib.lines.Line2D at 0x26dbef46bd0>]
```



```
In [326]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

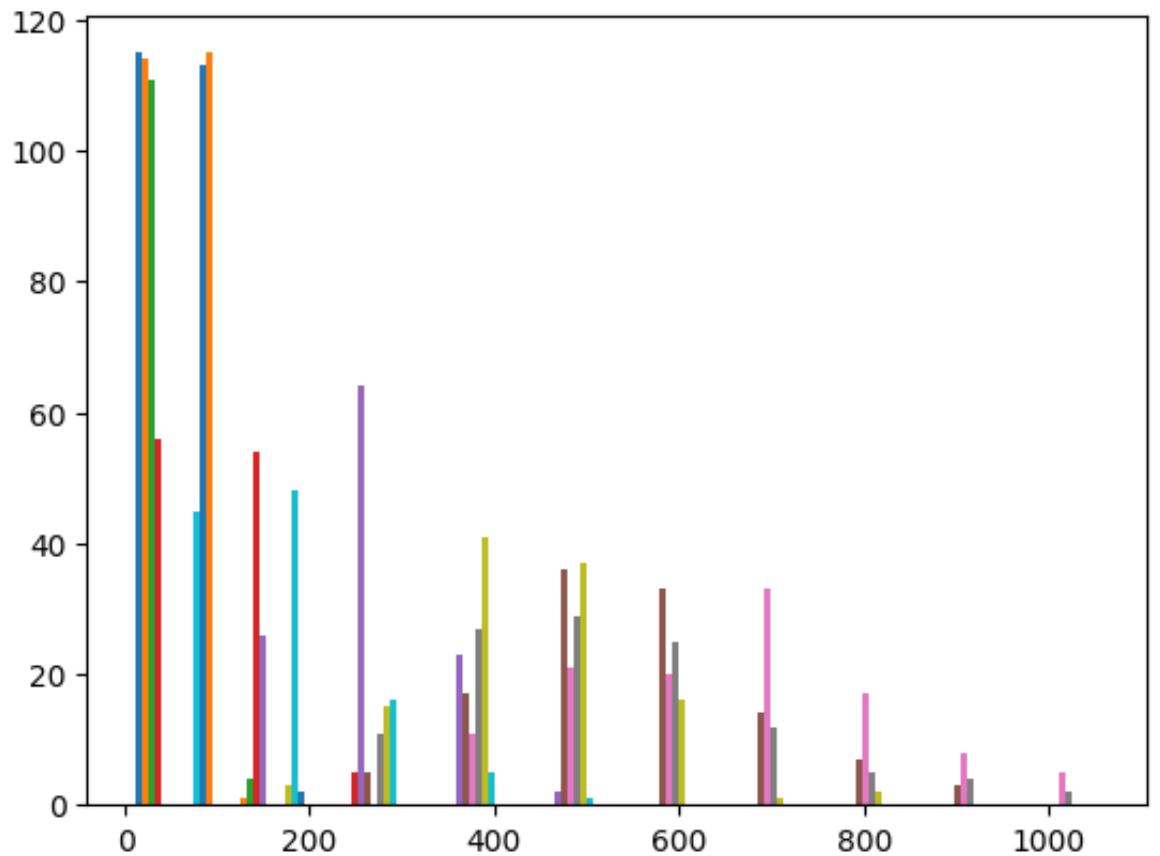
```
Out[326]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [327]: plt.hist(y)
```

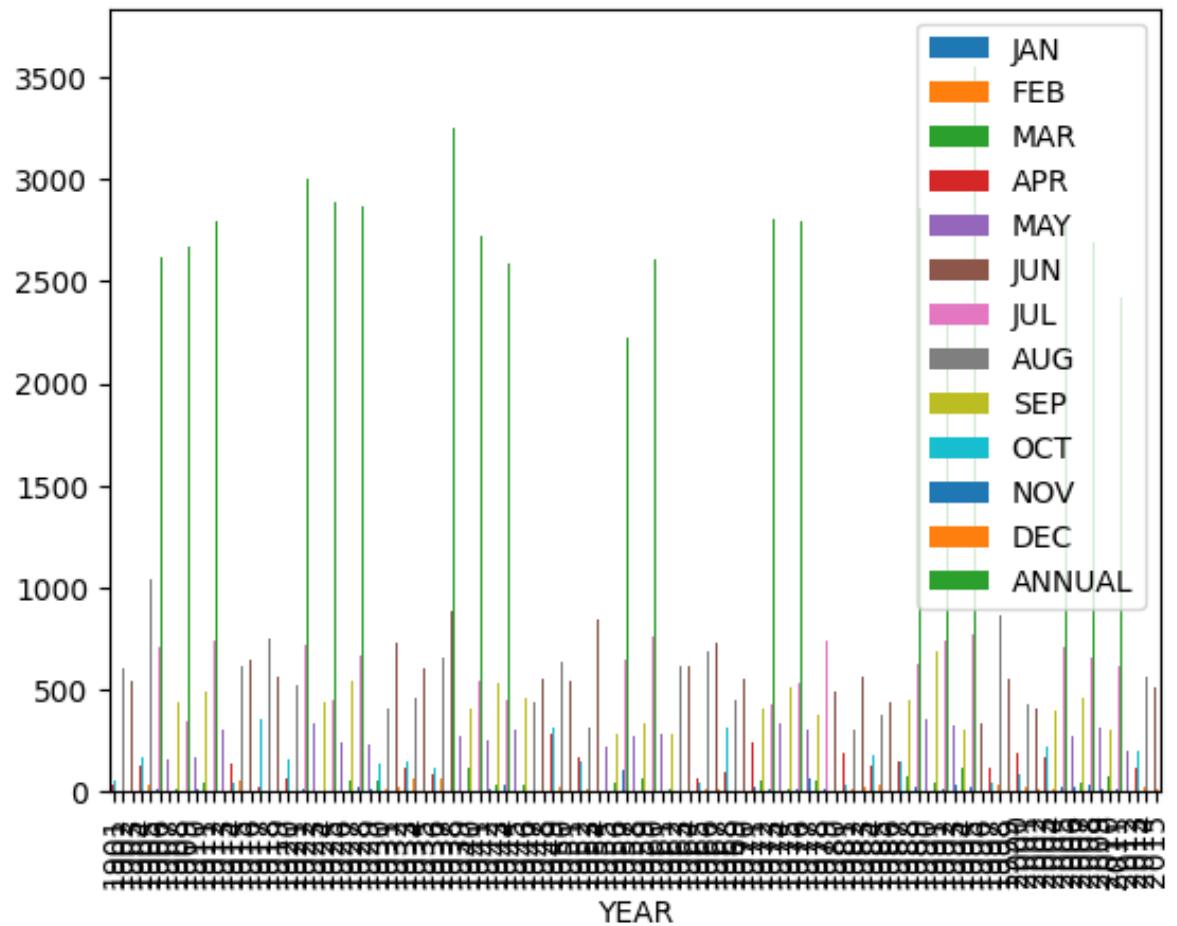
```
Out[327]: (array([[115., 0., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [114., 1., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [111., 4., 0., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [ 56., 54., 5., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [ 0., 26., 64., 23., 2., 0., 0., 0., 0., 0.,
       0.],
      [ 0., 0., 5., 17., 36., 33., 14., 7., 3.,
       0.],
      [ 0., 0., 0., 11., 21., 20., 33., 17., 8.,
       5.],
      [ 0., 0., 11., 27., 29., 25., 12., 5., 4.,
       2.],
      [ 0., 3., 15., 41., 37., 16., 1., 2., 0.,
       0.],
      [ 45., 48., 16., 5., 1., 0., 0., 0., 0.,
       0.],
      [113., 2., 0., 0., 0., 0., 0., 0., 0.,
       0.],
      [115, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
```

```
[115]:   ..,  ..,  ..,  ..,  ..,  ..,  ..,  ..,  ..,  ..,  ..,  
[0.]),  
array([  0. ,  106.46, 212.92, 319.38, 425.84, 532.3 , 63  
8.76,  
      745.22, 851.68, 958.14, 1064.6 ]),  
<a list of 12 BarContainer objects>)
```



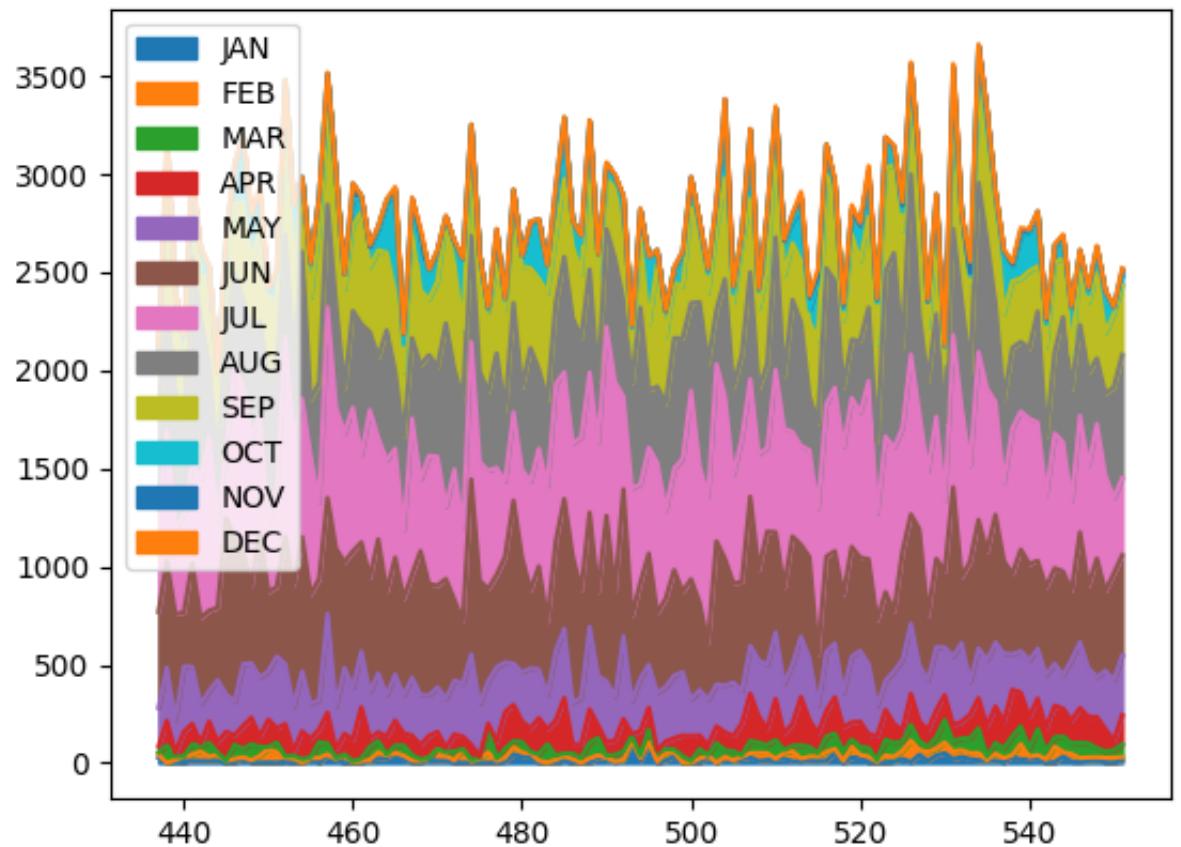
In [328]: `x.plot.bar(x="YEAR")`

Out[328]: <Axes: xlabel='YEAR'>



In [329]: `y.plot.area()`

Out[329]: <Axes: >



In [4]: `x=df[df["SUBDIVISION"]=="NAGA MANI MIZO TRIPURA"]
x`

Out[4]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEF
322	322	NAGA MANI MIZO TRIPURA	1901	11.7	18.1	29.4	206.2	124.0	443.3	331.4	466.0	304.1
323	323	NAGA MANI MIZO TRIPURA	1902	4.8	0.5	36.3	297.8	215.5	480.1	392.4	312.8	318.7
324	324	NAGA MANI MIZO TRIPURA	1903	6.5	40.5	139.8	45.5	159.9	458.6	300.2	470.6	366.1
325	325	NAGA MANI MIZO TRIPURA	1904	2.3	46.9	47.5	290.3	230.5	455.3	423.5	423.6	375.8
326	326	NAGA MANI MIZO TRIPURA	1905	9.1	35.3	306.5	161.7	193.6	339.7	450.1	429.9	320.1
...
432	432	NAGA MANI MIZO TRIPURA	2011	12.6	3.6	51.4	81.1	334.9	374.2	313.3	367.6	258.3
433	433	NAGA MANI MIZO TRIPURA	2012	24.5	10.2	20.3	243.5	163.5	396.2	280.1	342.7	248.7
434	434	NAGA MANI MIZO TRIPURA	2013	0.2	5.7	19.7	60.3	348.9	206.6	255.9	291.3	241.4
435	435	NAGA MANI MIZO TRIPURA	2014	1.2	21.0	25.4	49.6	192.5	268.3	295.7	372.3	300.9
436	436	NAGA MANI MIZO TRIPURA	2015	14.4	14.2	21.6	253.5	198.3	283.9	413.6	334.2	255.9

115 rows × 20 columns

In [5]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out [5]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
322	1901	11.7	18.1	29.4	206.2	124.0	443.3	331.4	466.0	304.1	166.7	67.4	0.0
323	1902	4.8	0.5	36.3	297.8	215.5	480.1	392.4	312.8	318.7	102.4	8.9	4.7
324	1903	6.5	40.5	139.8	45.5	159.9	458.6	300.2	470.6	366.1	166.4	76.7	0.1
325	1904	2.3	46.9	47.5	290.3	230.5	455.3	423.5	423.6	375.8	128.9	90.0	5.0
326	1905	9.1	35.3	306.5	161.7	193.6	339.7	450.1	429.9	320.1	246.4	8.0	27.1
...
432	2011	12.6	3.6	51.4	81.1	334.9	374.2	313.3	367.6	258.3	92.6	2.4	0.2
433	2012	24.5	10.2	20.3	243.5	163.5	396.2	280.1	342.7	248.7	160.9	32.0	0.4
434	2013	0.2	5.7	19.7	60.3	348.9	206.6	255.9	291.3	241.4	125.6	0.3	1.2
435	2014	1.2	21.0	25.4	49.6	192.5	268.3	295.7	372.3	300.9	69.6	3.3	0.1
436	2015	14.4	14.2	21.6	253.5	198.3	283.9	413.6	334.2	255.9	118.7	3.9	10.0

115 rows × 14 columns

In [6]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

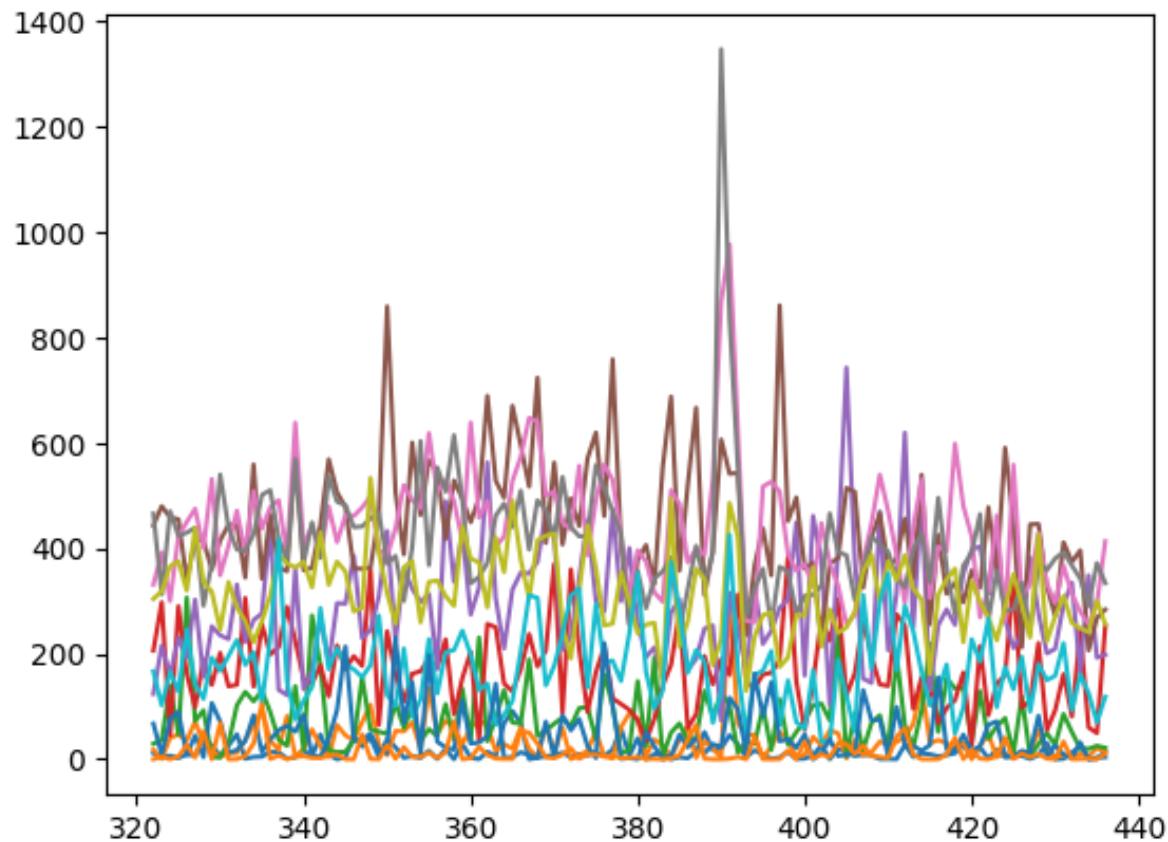
Out [6]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
322	11.7	18.1	29.4	206.2	124.0	443.3	331.4	466.0	304.1	166.7	67.4	0.0
323	4.8	0.5	36.3	297.8	215.5	480.1	392.4	312.8	318.7	102.4	8.9	4.7
324	6.5	40.5	139.8	45.5	159.9	458.6	300.2	470.6	366.1	166.4	76.7	0.1
325	2.3	46.9	47.5	290.3	230.5	455.3	423.5	423.6	375.8	128.9	90.0	5.0
326	9.1	35.3	306.5	161.7	193.6	339.7	450.1	429.9	320.1	246.4	8.0	27.1
...
432	12.6	3.6	51.4	81.1	334.9	374.2	313.3	367.6	258.3	92.6	2.4	0.2
433	24.5	10.2	20.3	243.5	163.5	396.2	280.1	342.7	248.7	160.9	32.0	0.4
434	0.2	5.7	19.7	60.3	348.9	206.6	255.9	291.3	241.4	125.6	0.3	1.2
435	1.2	21.0	25.4	49.6	192.5	268.3	295.7	372.3	300.9	69.6	3.3	0.1
436	14.4	14.2	21.6	253.5	198.3	283.9	413.6	334.2	255.9	118.7	3.9	10.0

115 rows × 12 columns

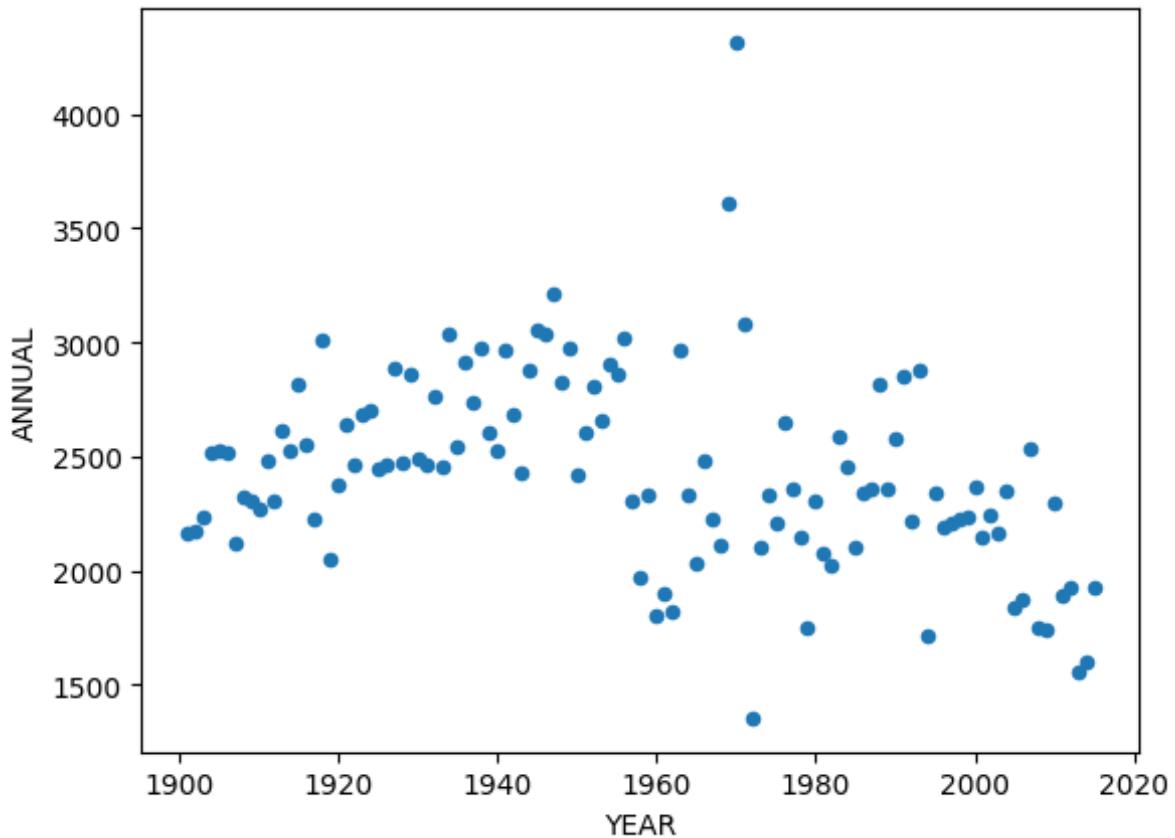
```
In [7]: plt.plot(y)
```

```
Out[7]: [
```



```
In [8]: x.plot.scatter(x="YEAR", y="ANNUAL")
```

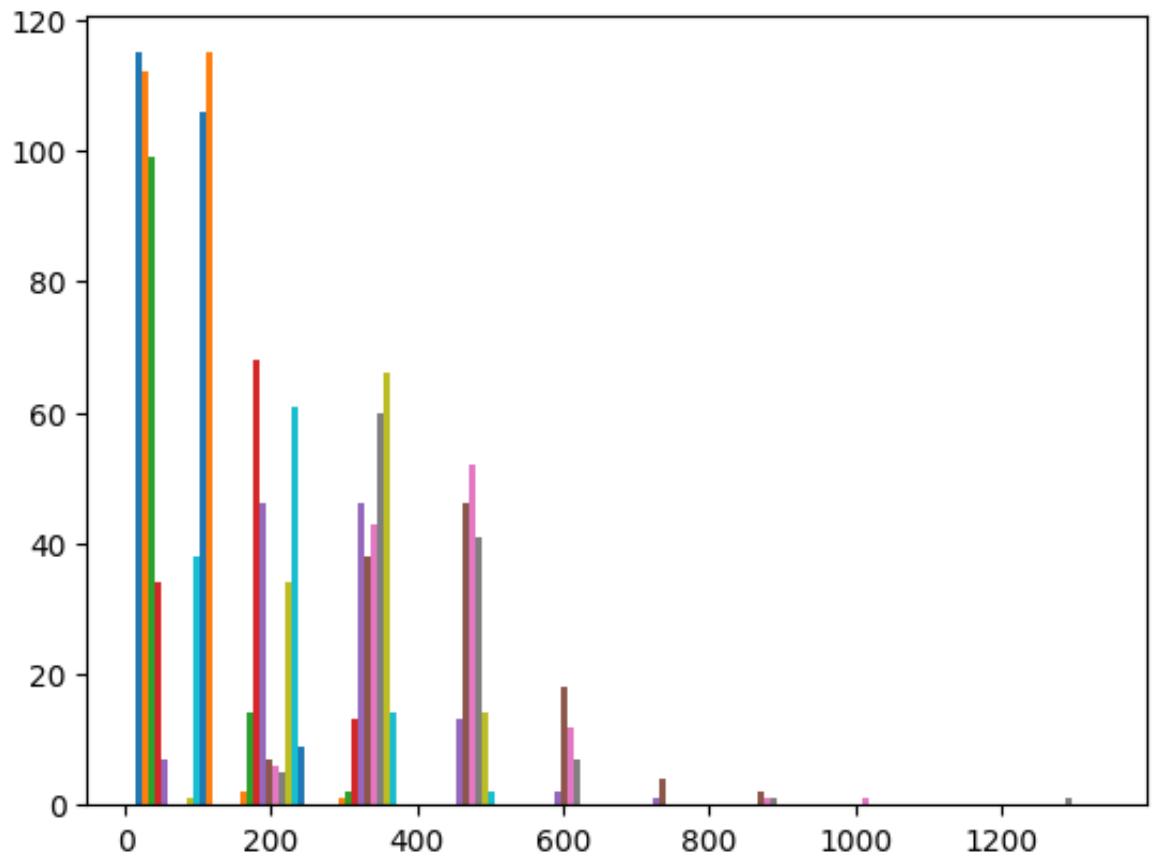
```
Out[8]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



```
In [9]: plt.hist(y)
```

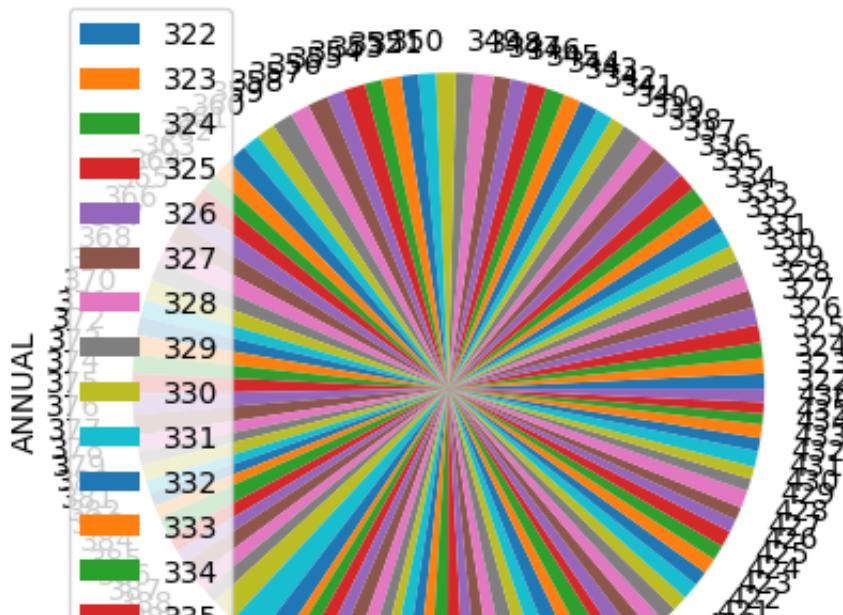
```
Out[9]: (array([[115.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
   0.],
      [112.,  2.,  1.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
   0.],
      [ 99., 14.,  2.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
   0.],
      [ 34., 68., 13.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
   0.],
      [  7., 46., 46., 13.,  2.,  1.,  0.,  0.,  0.,  0.,
   0.],
      [  0.,  7., 38., 46., 18.,  4.,  2.,  0.,  0.,  0.,
   0.],
      [  0.,  6., 43., 52., 12.,  0.,  1.,  1.,  1.,  0.,
   0.],
      [  0.,  5., 60., 41.,  7.,  0.,  1.,  0.,  0.,  0.,
   1.],
      [  1., 34., 66., 14.,  0.,  0.,  0.,  0.,  0.,  0.,
   0.],
      [ 38., 61., 14.,  2.,  0.,  0.,  0.,  0.,  0.,  0.,
   0.],
      [106.,  9.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,  0.,
   0.],
      [115,  0,  0,  0,  0,  0,  0,  0,  0,  0,  0]
```

```
    111.0,   0.0,   0.0,   0.0,   0.0,   0.0,   0.0,   0.0,  
0.0]),  
array([  0.0 , 134.72, 269.44, 404.16, 538.88, 673.6 , 80  
8.32,  
      943.04, 1077.76, 1212.48, 1347.2 ]),  
<a list of 12 BarContainer objects>)
```



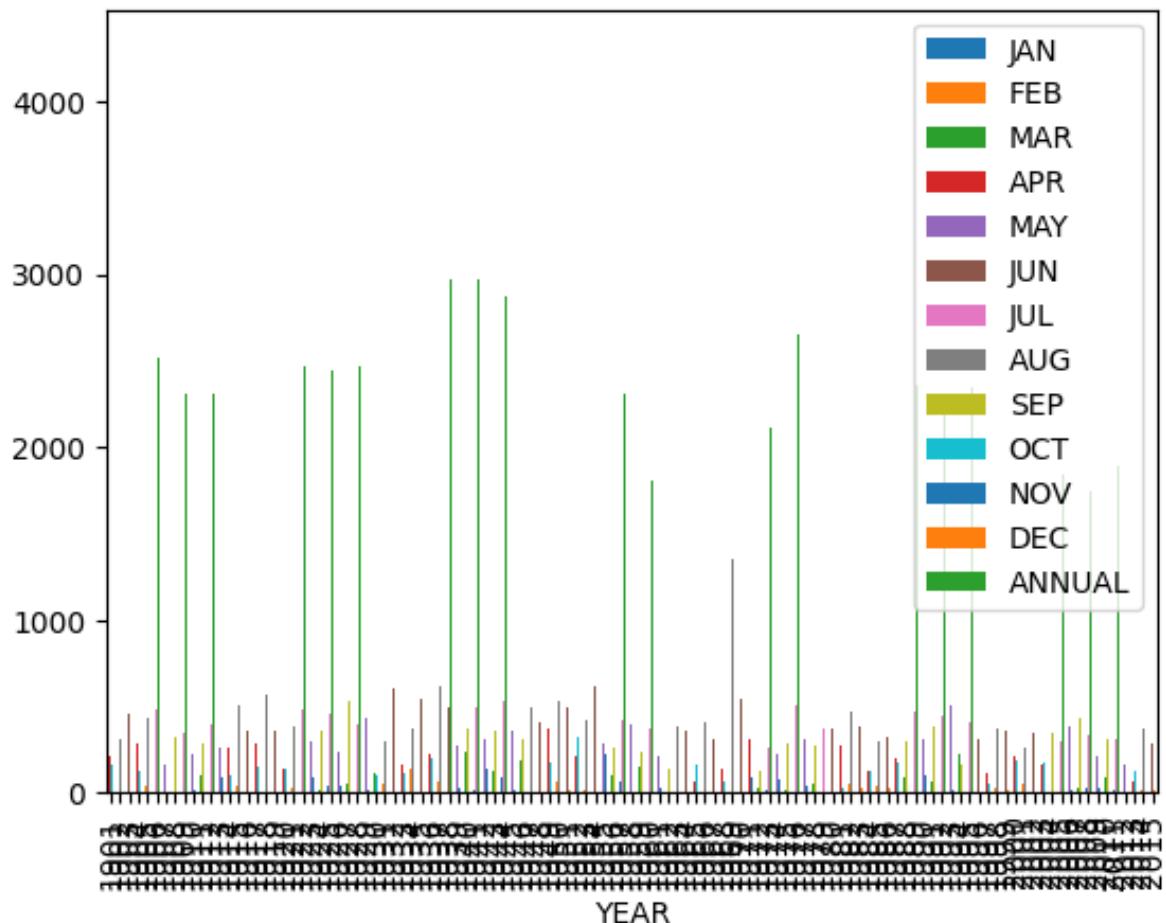
```
In [10]: x.plot.pie(y="ANNUAL", subplots=True)
```

```
Out[10]: array([<Axes: ylabel='ANNUAL'>], dtype=object)
```



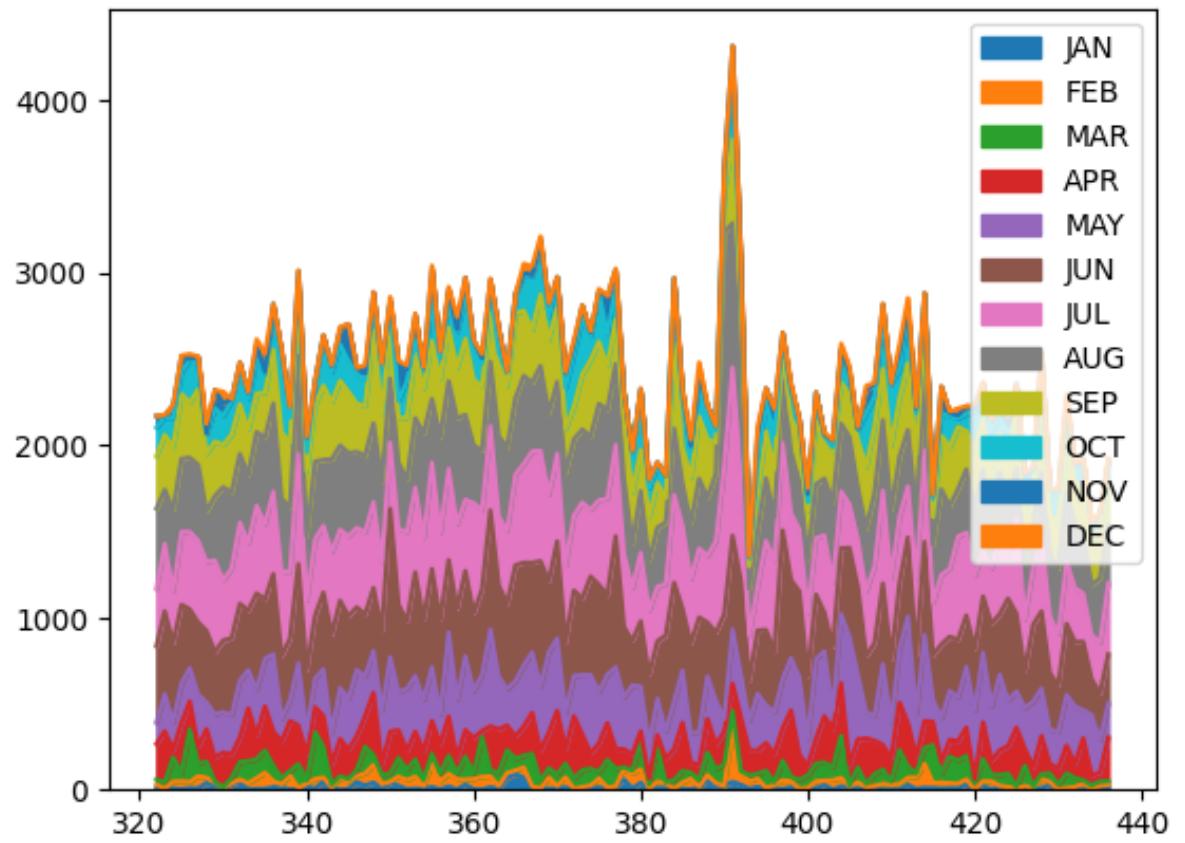
```
In [11]: x.plot.bar(x="YEAR")
```

```
Out[11]: <Axes: xlabel='YEAR'>
```



In [12]: `y.plot.area()`

Out[12]: <Axes: >



ASSAM & MEGHALAYA

In [13]: `x=df[df["SUBDIVISION"]=="ASSAM & MEGHALAYA"]
x`

Out [13]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEF
207	207	ASSAM & MEGHALAYA	1901	27.1	19.5	30.6	223.0	207.0	524.9	430.6	464.1	291.4
208	208	ASSAM & MEGHALAYA	1902	9.3	10.2	105.6	350.0	262.1	620.7	510.8	536.0	441.3
209	209	ASSAM & MEGHALAYA	1903	19.9	25.4	103.6	140.6	206.6	607.4	362.7	551.9	306.4
210	210	ASSAM & MEGHALAYA	1904	11.1	56.1	51.9	457.1	375.2	385.7	477.6	438.8	245.9
211	211	ASSAM & MEGHALAYA	1905	19.9	16.9	137.9	213.0	275.5	521.7	439.1	649.1	276.0
...
317	317	ASSAM & MEGHALAYA	2011	11.1	11.4	109.0	92.1	238.3	316.0	395.8	302.6	221.6
318	318	ASSAM & MEGHALAYA	2012	15.2	6.9	28.8	279.1	185.8	729.7	444.3	289.2	411.6
319	319	ASSAM & MEGHALAYA	2013	1.1	9.6	44.0	112.8	346.7	286.2	367.8	289.7	229.3
320	320	ASSAM & MEGHALAYA	2014	2.0	28.3	29.3	51.5	351.1	426.4	374.4	484.6	420.2
321	321	ASSAM & MEGHALAYA	2015	13.4	15.5	37.5	250.9	332.5	558.5	300.1	590.9	279.9

115 rows × 20 columns

In [14]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out [14]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
207	1901	27.1	19.5	30.6	223.0	207.0	524.9	430.6	464.1	291.4	163.7	115.6	1.2
208	1902	9.3	10.2	105.6	350.0	262.1	620.7	510.8	536.0	441.3	97.0	7.8	1.3
209	1903	19.9	25.4	103.6	140.6	206.6	607.4	362.7	551.9	306.4	159.5	59.3	1.3
210	1904	11.1	56.1	51.9	457.1	375.2	385.7	477.6	438.8	245.9	115.9	46.4	2.5
211	1905	19.9	16.9	137.9	213.0	275.5	521.7	439.1	649.1	276.0	200.0	16.8	24.8
...
317	2011	11.1	11.4	109.0	92.1	238.3	316.0	395.8	302.6	221.6	30.2	11.9	3.5
318	2012	15.2	6.9	28.8	279.1	185.8	729.7	444.3	289.2	411.6	199.4	17.1	2.3
319	2013	1.1	9.6	44.0	112.8	346.7	286.2	367.8	289.7	229.3	126.3	1.0	2.0
320	2014	2.0	28.3	29.3	51.5	351.1	426.4	374.4	484.6	420.2	35.0	3.0	0.4
321	2015	13.4	15.5	37.5	250.9	332.5	558.5	300.1	590.9	279.9	62.6	14.0	15.2

115 rows × 14 columns

In [15]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

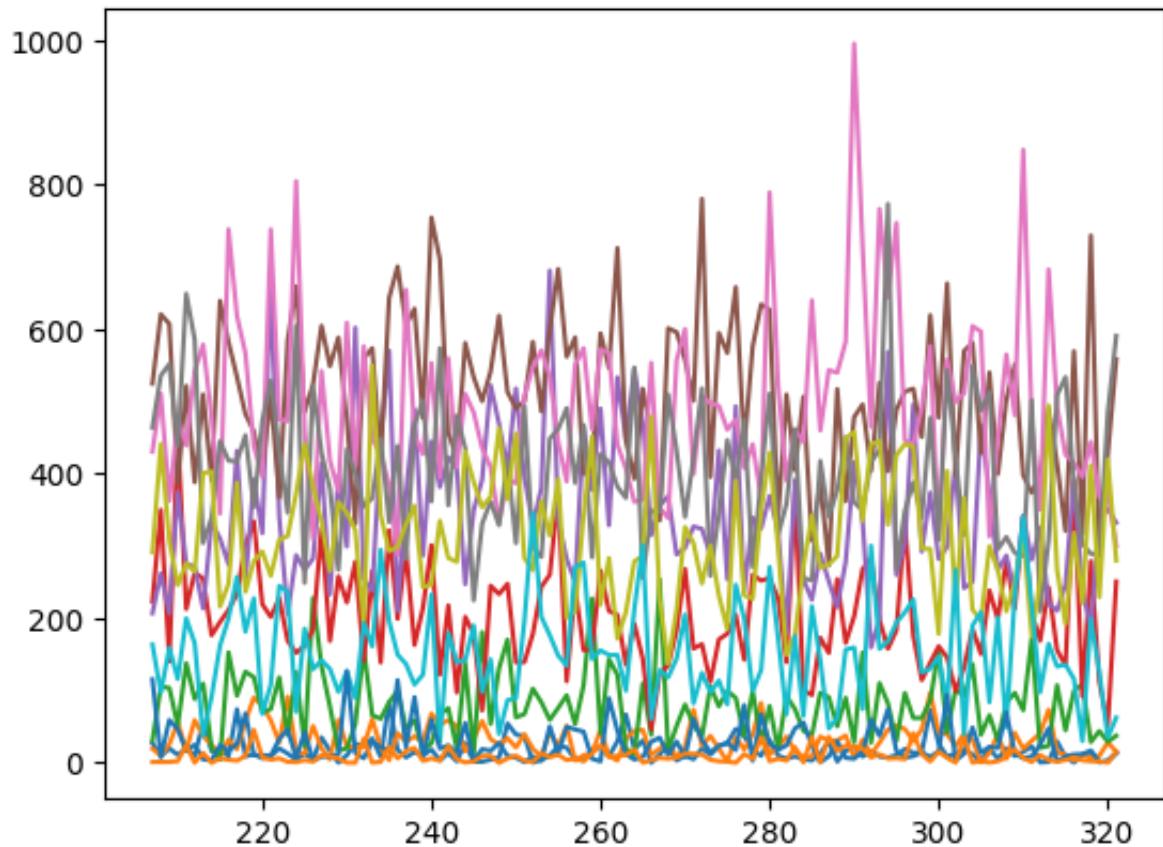
Out [15]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
207	27.1	19.5	30.6	223.0	207.0	524.9	430.6	464.1	291.4	163.7	115.6	1.2
208	9.3	10.2	105.6	350.0	262.1	620.7	510.8	536.0	441.3	97.0	7.8	1.3
209	19.9	25.4	103.6	140.6	206.6	607.4	362.7	551.9	306.4	159.5	59.3	1.3
210	11.1	56.1	51.9	457.1	375.2	385.7	477.6	438.8	245.9	115.9	46.4	2.5
211	19.9	16.9	137.9	213.0	275.5	521.7	439.1	649.1	276.0	200.0	16.8	24.8
...
317	11.1	11.4	109.0	92.1	238.3	316.0	395.8	302.6	221.6	30.2	11.9	3.5
318	15.2	6.9	28.8	279.1	185.8	729.7	444.3	289.2	411.6	199.4	17.1	2.3
319	1.1	9.6	44.0	112.8	346.7	286.2	367.8	289.7	229.3	126.3	1.0	2.0
320	2.0	28.3	29.3	51.5	351.1	426.4	374.4	484.6	420.2	35.0	3.0	0.4
321	13.4	15.5	37.5	250.9	332.5	558.5	300.1	590.9	279.9	62.6	14.0	15.2

115 rows × 12 columns

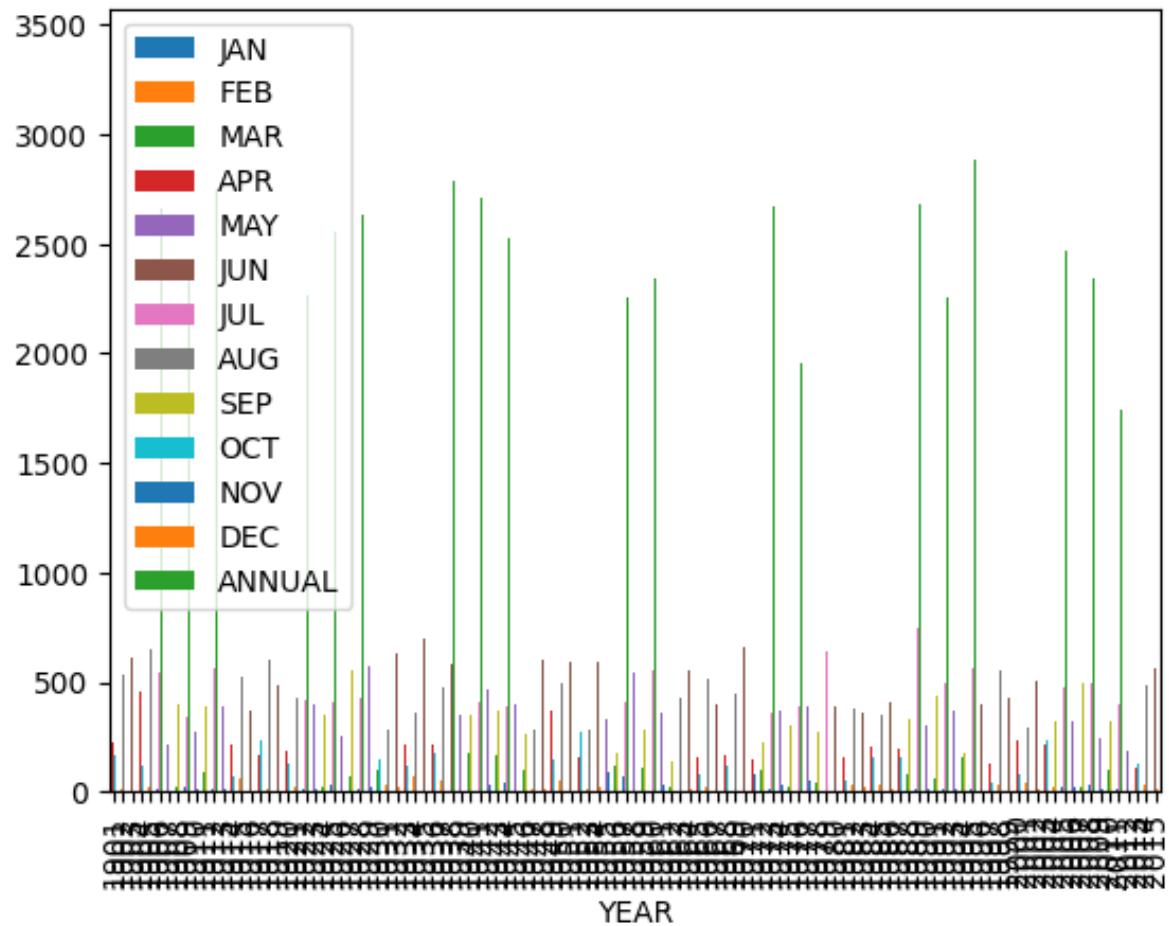
```
In [16]: plt.plot(y)
```

```
Out[16]: [<matplotlib.lines.Line2D at 0x1a4549b79d0>,
<matplotlib.lines.Line2D at 0x1a456df2950>,
<matplotlib.lines.Line2D at 0x1a456df2c50>,
<matplotlib.lines.Line2D at 0x1a456df3050>,
<matplotlib.lines.Line2D at 0x1a456df3390>,
<matplotlib.lines.Line2D at 0x1a456df3690>,
<matplotlib.lines.Line2D at 0x1a456df3c10>,
<matplotlib.lines.Line2D at 0x1a456df3e90>,
<matplotlib.lines.Line2D at 0x1a456ddb10>,
<matplotlib.lines.Line2D at 0x1a456e00810>,
<matplotlib.lines.Line2D at 0x1a456e00b90>,
<matplotlib.lines.Line2D at 0x1a455ba7150>]
```



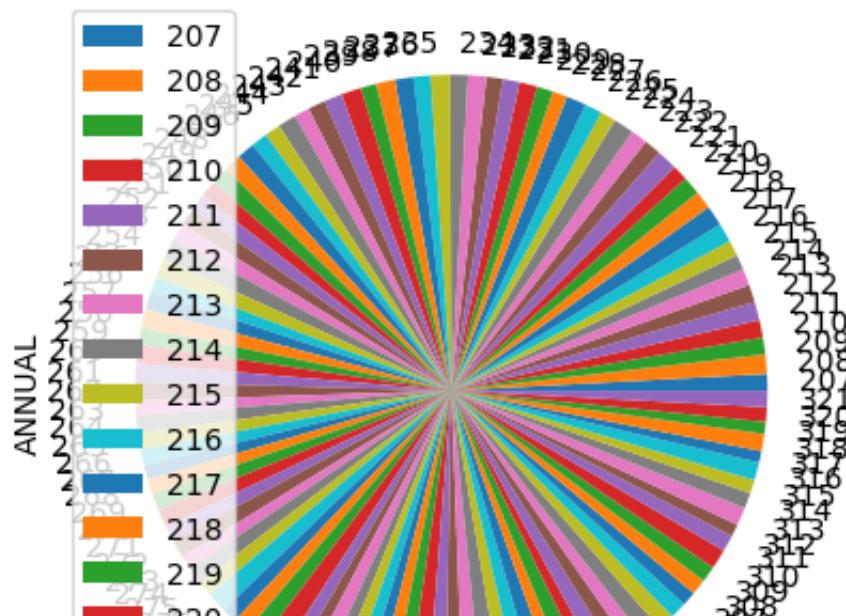
In [17]: `x.plot.bar(x="YEAR")`

Out[17]: <Axes: xlabel='YEAR'>



In [18]: `x.plot.pie(y="ANNUAL", subplots=True)`

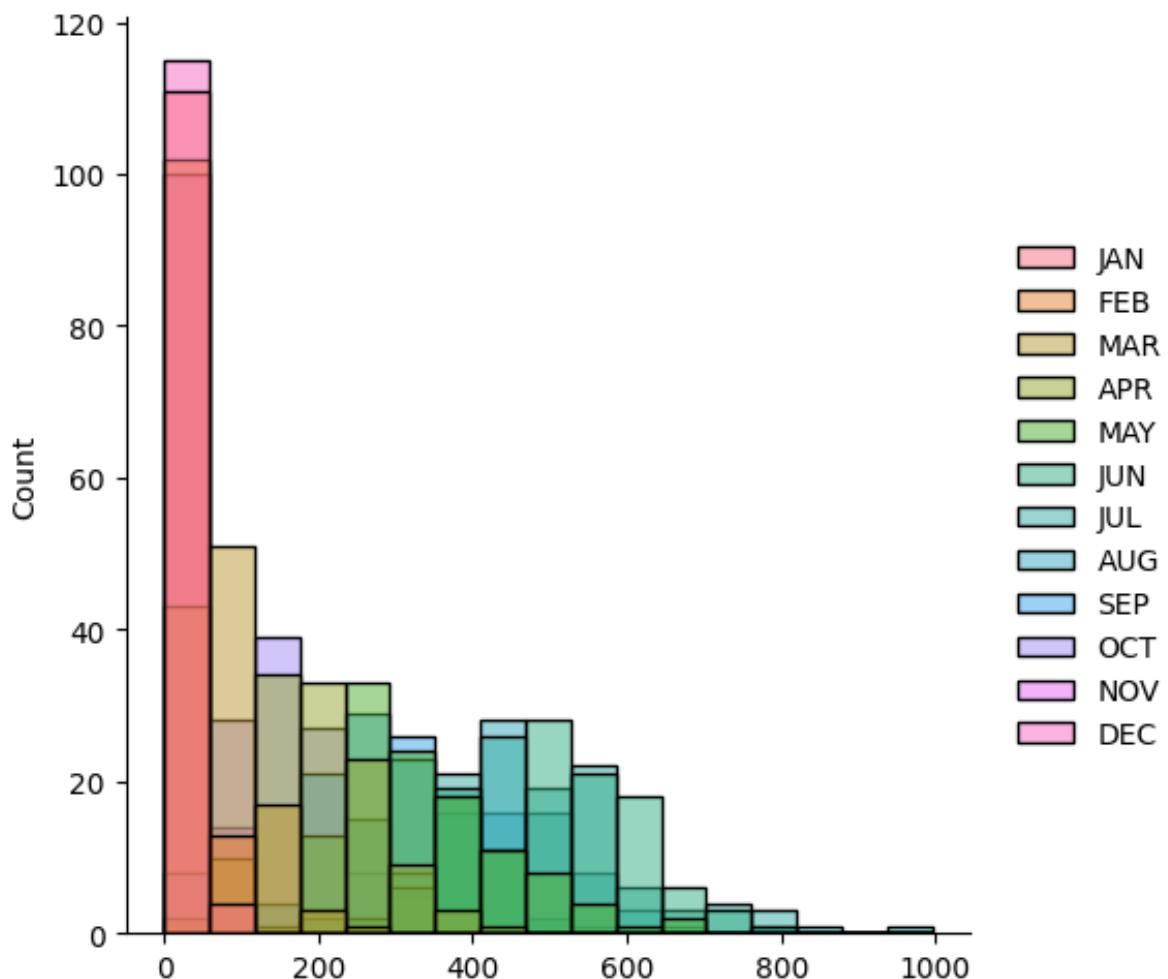
Out[18]: array([<Axes: ylabel='ANNUAL'>], dtype=object)



In [19]: `sns.displot(y)`

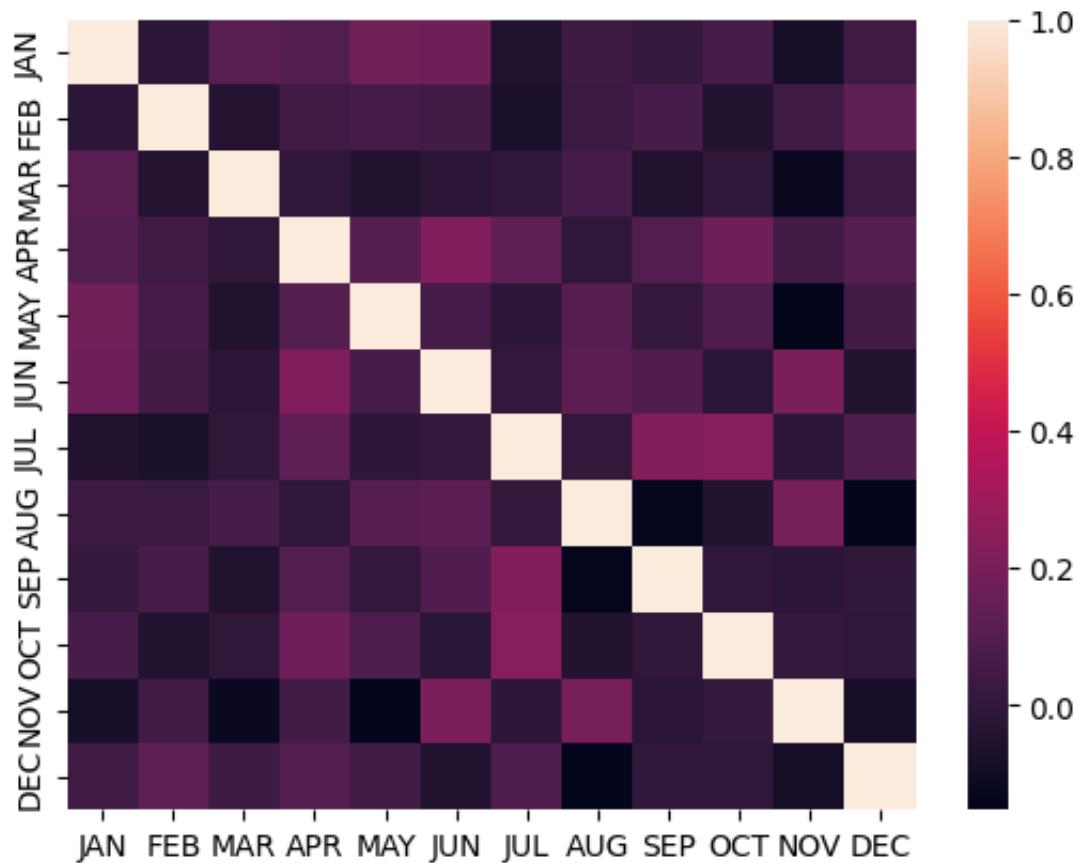
```
C:\Users\Gokul Jana\AppData\Local\Programs\Python\Python311\Lib\site-packages\seaborn\axisgrid.py:118: UserWarning: The figure layout has changed to tight
  self._figure.tight_layout(*args, **kwargs)
```

Out [19]: <seaborn.axisgrid.FacetGrid at 0x1a457988410>



In [20]: `sns.heatmap(y.corr())`

Out [20]: <Axes: >



ANDAMAN & NICOBAR ISLANDS

In [21]: `x=df[df["SUBDIVISION"]=="ANDAMAN & NICOBAR ISLANDS"]
x`

Out [21]:

		index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	S	
		0	0	ANDAMAN & NICOBAR ISLANDS	1901	49.2	87.1	29.2	2.3	528.8	517.5	365.1	481.1	33.
		1	1	ANDAMAN & NICOBAR ISLANDS	1902	0.0	159.8	12.2	0.0	446.1	537.1	228.9	753.7	66
		2	2	ANDAMAN & NICOBAR ISLANDS	1903	12.7	144.0	0.0	1.0	235.1	479.9	728.4	326.7	33
		3	3	ANDAMAN & NICOBAR ISLANDS	1904	9.4	14.7	0.0	202.4	304.5	495.1	502.0	160.1	82
		4	4	ANDAMAN & NICOBAR ISLANDS	1905	1.3	0.0	3.3	26.9	279.5	628.7	368.7	330.5	29
		
		105	105	ANDAMAN & NICOBAR ISLANDS	2011	265.9	84.8	272.8	111.4	326.5	383.2	583.2	441.5	75
		106	106	ANDAMAN & NICOBAR ISLANDS	2012	119.9	45.6	30.9	55.8	533.9	458.2	317.3	369.6	86
		107	107	ANDAMAN & NICOBAR ISLANDS	2013	67.1	37.6	43.0	46.3	509.3	777.0	564.8	336.7	47
		108	108	ANDAMAN & NICOBAR ISLANDS	2014	41.9	8.6	0.0	11.1	238.0	416.6	467.6	321.6	41
		109	109	ANDAMAN & NICOBAR ISLANDS	2015	126.8	7.6	3.1	138.2	331.9	346.4	328.9	480.0	52

104 rows × 20 columns

In [22]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out [22]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	1901	49.2	87.1	29.2	2.3	528.8	517.5	365.1	481.1	332.6	388.5	558.2	33
1	1902	0.0	159.8	12.2	0.0	446.1	537.1	228.9	753.7	666.2	197.2	359.0	160
2	1903	12.7	144.0	0.0	1.0	235.1	479.9	728.4	326.7	339.0	181.2	284.4	225
3	1904	9.4	14.7	0.0	202.4	304.5	495.1	502.0	160.1	820.4	222.2	308.7	40
4	1905	1.3	0.0	3.3	26.9	279.5	628.7	368.7	330.5	297.0	260.7	25.4	344
...
105	2011	265.9	84.8	272.8	111.4	326.5	383.2	583.2	441.5	757.1	212.3	150.8	238
106	2012	119.9	45.6	30.9	55.8	533.9	458.2	317.3	369.6	868.9	209.7	300.5	187
107	2013	67.1	37.6	43.0	46.3	509.3	777.0	564.8	336.7	473.6	455.8	354.2	92
108	2014	41.9	8.6	0.0	11.1	238.0	416.6	467.6	321.6	412.9	402.6	201.2	100
109	2015	126.8	7.6	3.1	138.2	331.9	346.4	328.9	480.0	523.3	252.1	236.3	129

104 rows × 14 columns

In [23]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

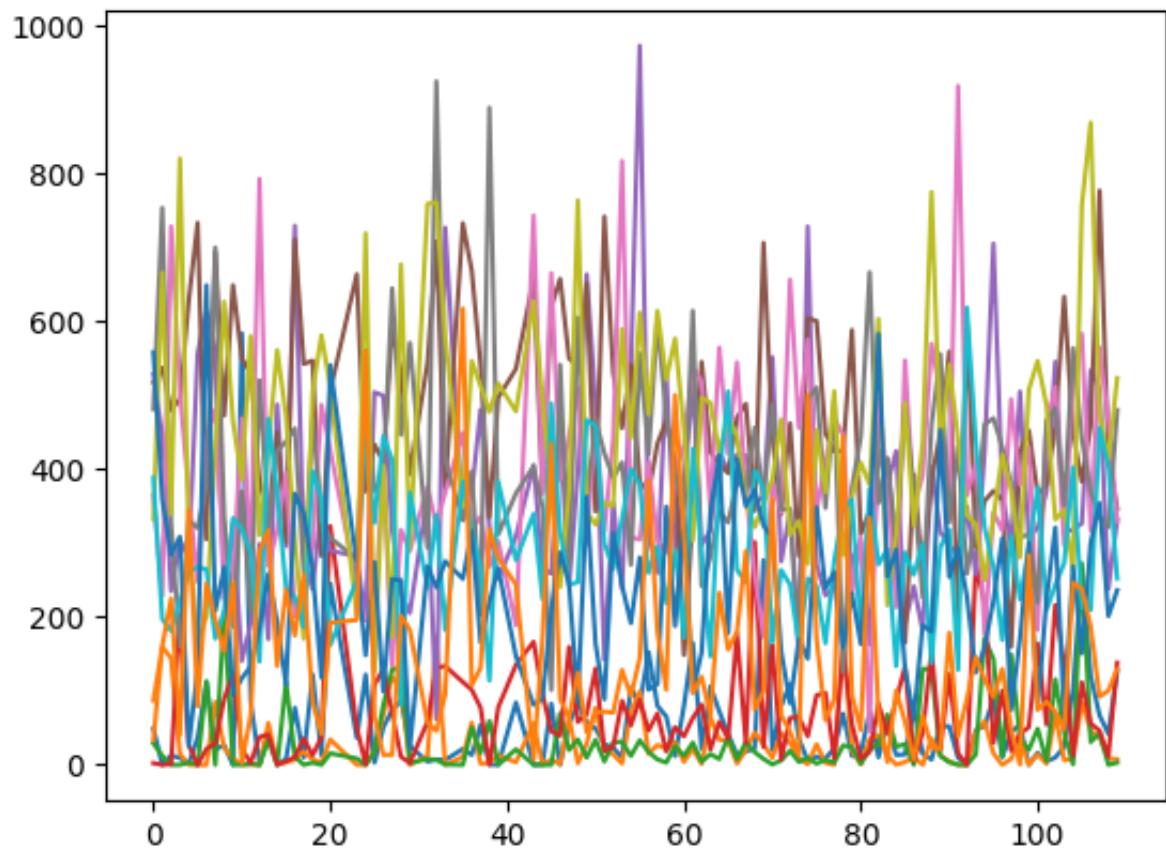
Out [23]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	49.2	87.1	29.2	2.3	528.8	517.5	365.1	481.1	332.6	388.5	558.2	33.6
1	0.0	159.8	12.2	0.0	446.1	537.1	228.9	753.7	666.2	197.2	359.0	160.5
2	12.7	144.0	0.0	1.0	235.1	479.9	728.4	326.7	339.0	181.2	284.4	225.0
3	9.4	14.7	0.0	202.4	304.5	495.1	502.0	160.1	820.4	222.2	308.7	40.1
4	1.3	0.0	3.3	26.9	279.5	628.7	368.7	330.5	297.0	260.7	25.4	344.7
...
105	265.9	84.8	272.8	111.4	326.5	383.2	583.2	441.5	757.1	212.3	150.8	238.5
106	119.9	45.6	30.9	55.8	533.9	458.2	317.3	369.6	868.9	209.7	300.5	187.3
107	67.1	37.6	43.0	46.3	509.3	777.0	564.8	336.7	473.6	455.8	354.2	92.3
108	41.9	8.6	0.0	11.1	238.0	416.6	467.6	321.6	412.9	402.6	201.2	100.4
109	126.8	7.6	3.1	138.2	331.9	346.4	328.9	480.0	523.3	252.1	236.3	129.9

104 rows × 12 columns

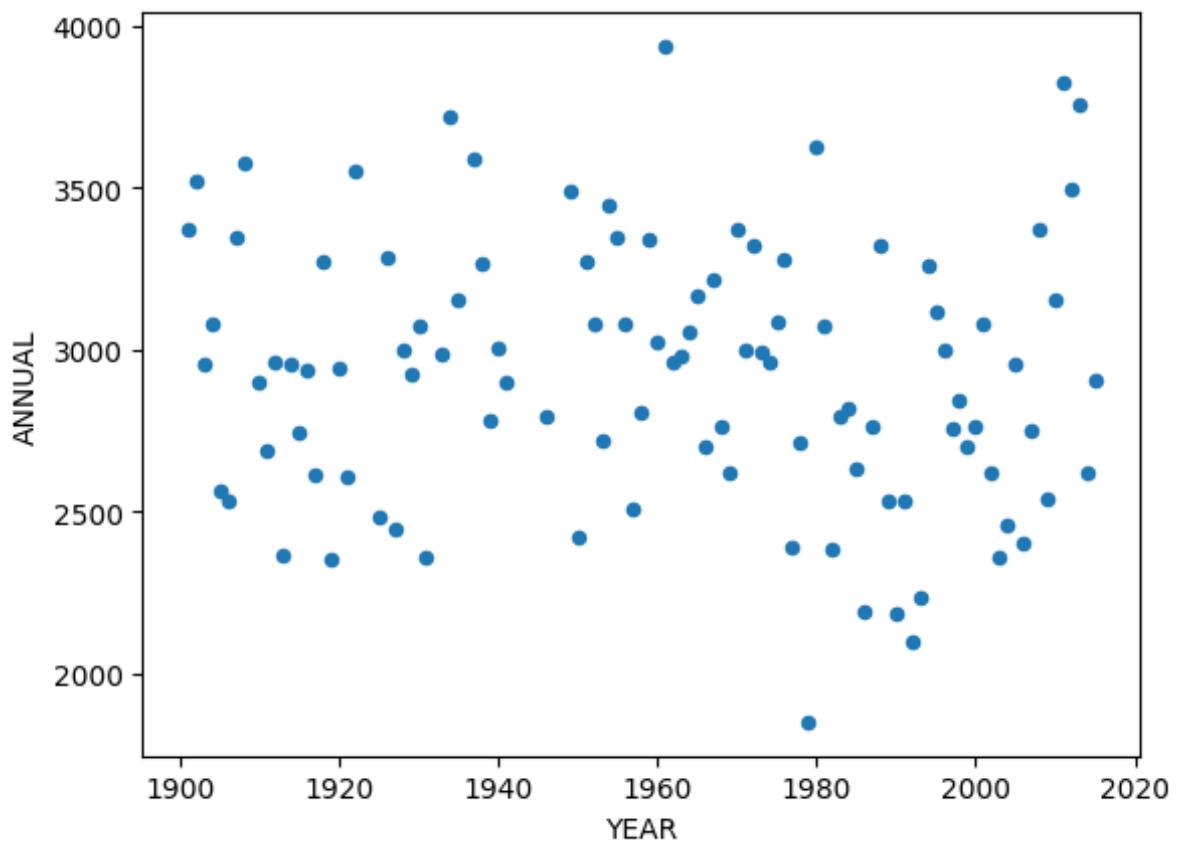
```
In [24]: plt.plot(y)
```

```
Out[24]: [<matplotlib.lines.Line2D at 0x1a4584dbd10>,
<matplotlib.lines.Line2D at 0x1a457b01710>,
<matplotlib.lines.Line2D at 0x1a459603a90>,
<matplotlib.lines.Line2D at 0x1a459603e50>,
<matplotlib.lines.Line2D at 0x1a459610190>,
<matplotlib.lines.Line2D at 0x1a459610610>,
<matplotlib.lines.Line2D at 0x1a459610950>,
<matplotlib.lines.Line2D at 0x1a459610d50>,
<matplotlib.lines.Line2D at 0x1a459610110>,
<matplotlib.lines.Line2D at 0x1a459611550>,
<matplotlib.lines.Line2D at 0x1a459601850>,
<matplotlib.lines.Line2D at 0x1a459611b10>]
```



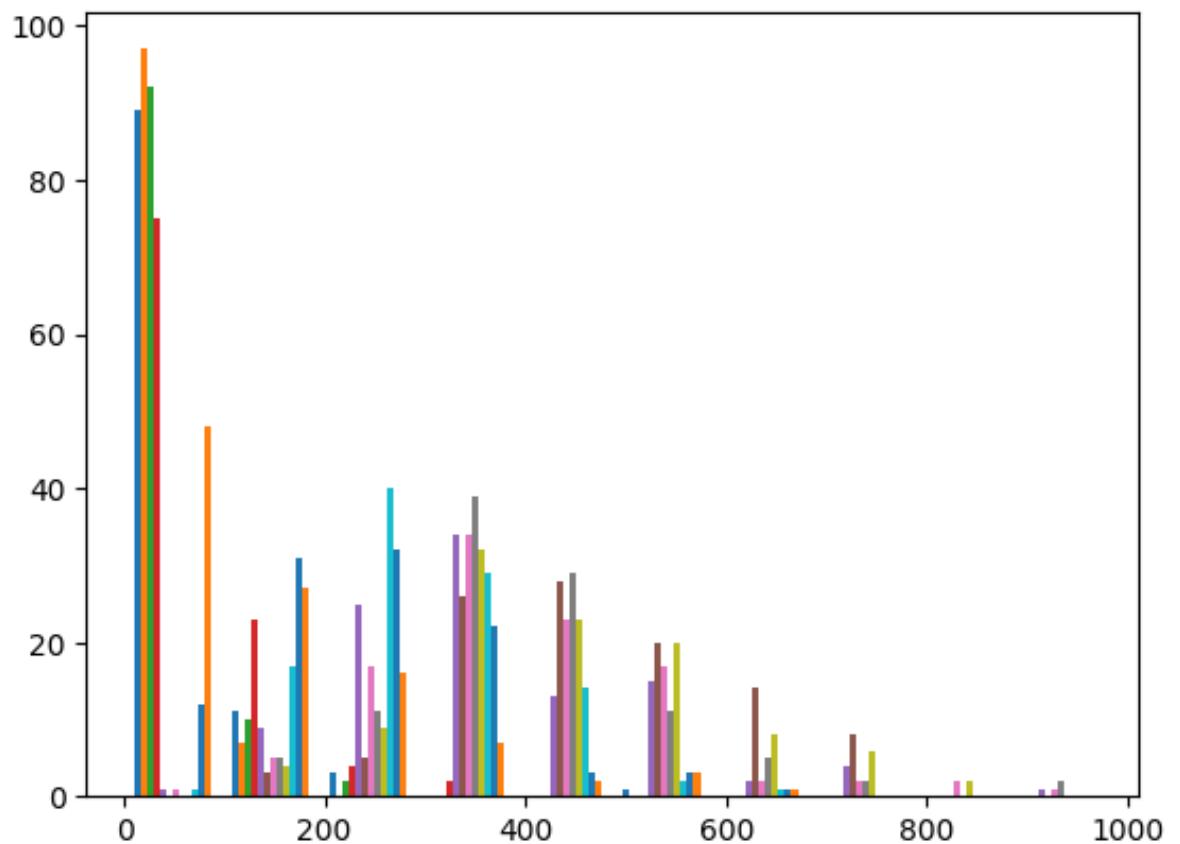
```
In [25]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

```
Out[25]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



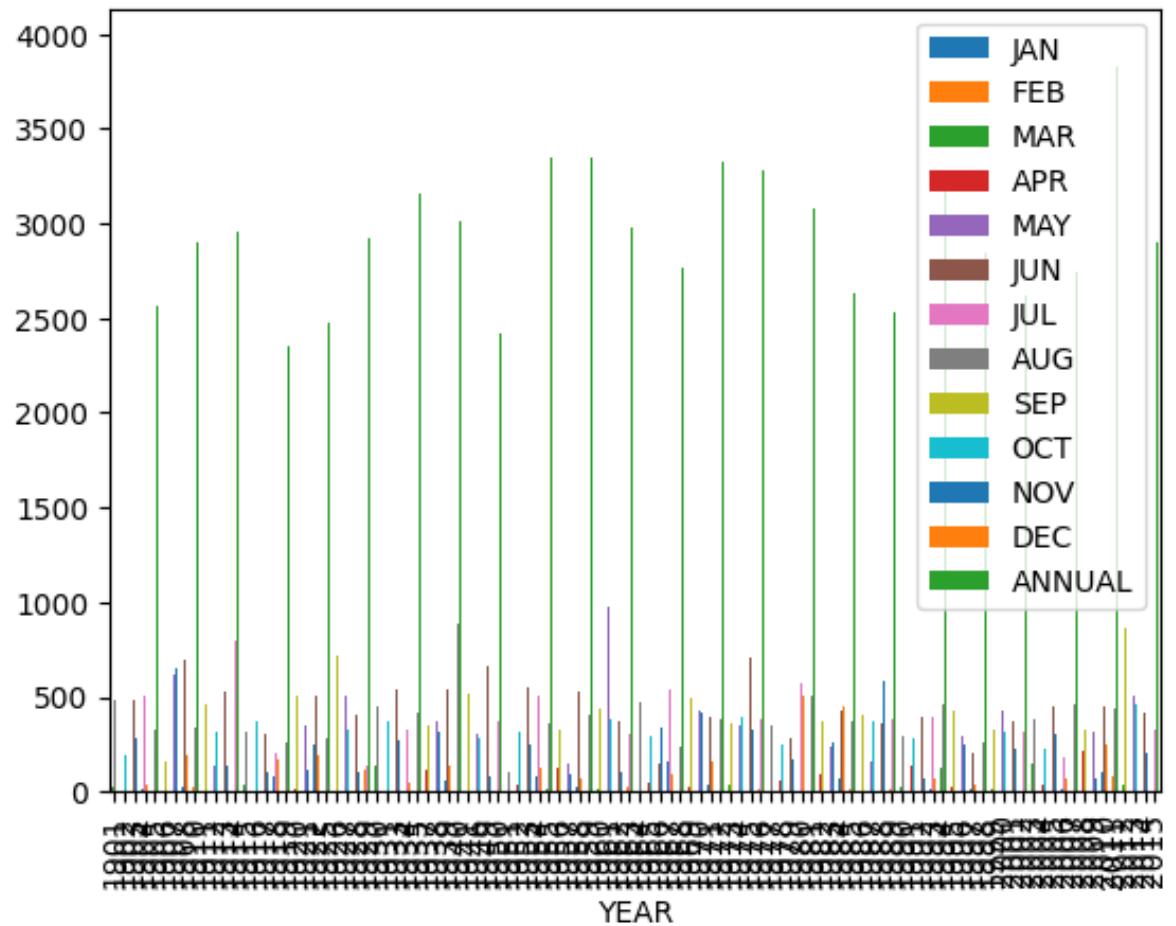
In [26]: `plt.hist(y)`

Out[26]: (`array([[89., 11., 3., 0., 0., 1., 0., 0., 0., 0., 0., 0.], [97., 7., 0., 0., 0., 0., 0., 0., 0., 0., 0., 0.], [92., 10., 2., 0., 0., 0., 0., 0., 0., 0., 0., 0.], [75., 23., 4., 2., 0., 0., 0., 0., 0., 0., 0., 0.], [1., 9., 25., 34., 13., 15., 2., 4., 0., 0., 1.], [0., 3., 5., 26., 28., 20., 14., 8., 0., 0., 0.], [1., 5., 17., 34., 23., 17., 2., 2., 2., 2., 1.], [0., 5., 11., 39., 29., 11., 5., 2., 0., 0., 2.], [0., 4., 9., 32., 23., 20., 8., 6., 2., 0., 0.], [1., 17., 40., 29., 14., 2., 1., 0., 0., 0., 0.], [12., 31., 32., 22., 3., 3., 1., 0., 0., 0., 0.], [48., 27., 16., 7., 2., 3., 1., 0., 0., 0., 0.]])`,
`array([0. , 97.31, 194.62, 291.93, 389.24, 486.55, 583.86, 681.17,`
`778.48, 875.79, 973.1]),`
`<a list of 12 BarContainer objects>)`



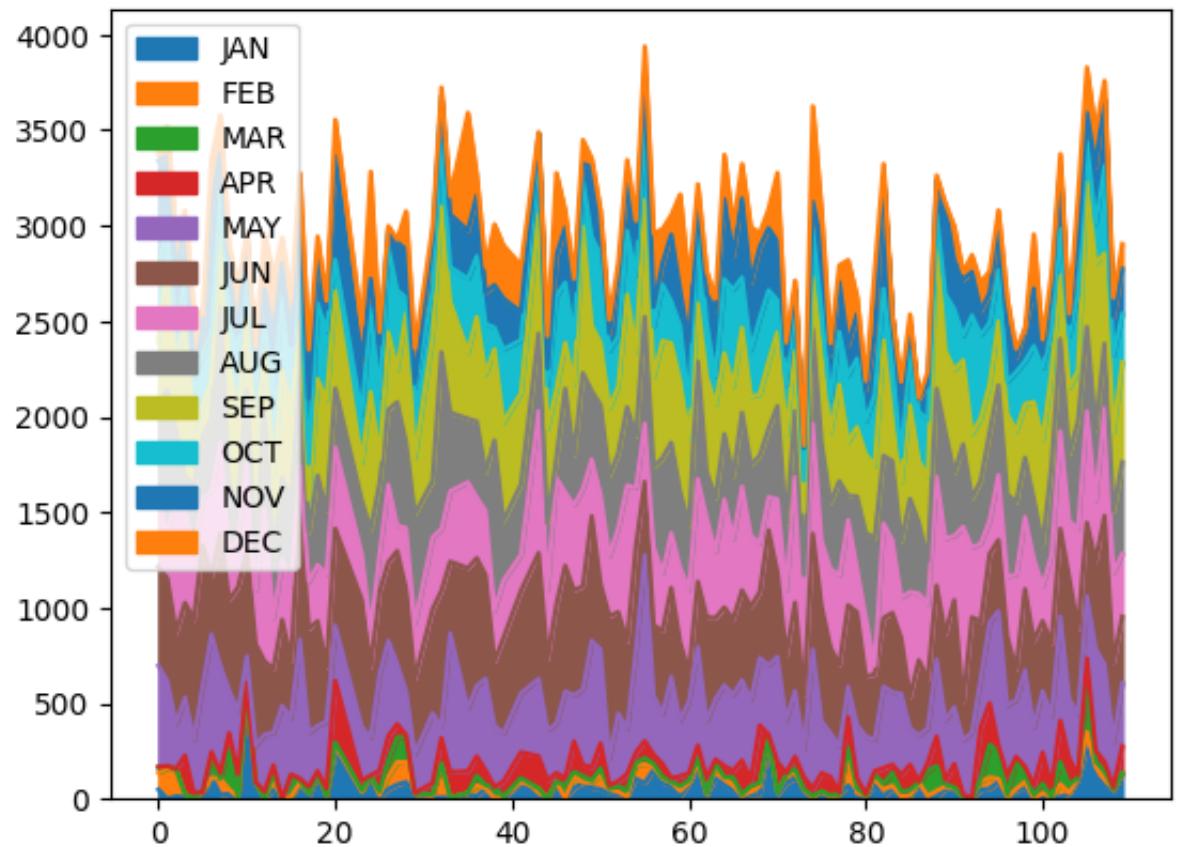
In [27]: `x.plot.bar(x="YEAR")`

Out [27]: <Axes: xlabel='YEAR'>



In [28]: `y.plot.area()`

Out [28]: <Axes: >



LAKSHADWEEP

In [29]:

```
x=df[df["SUBDIVISION"]=="LAKSHADWEEP"]
x
```

Out [29]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	S
4002	4002	LAKSHADWEEP	1901	22.6	86.4	114.8	263.8	37.3	459.0	0.0	0.0	4
4003	4003	LAKSHADWEEP	1902	99.3	9.6	32.6	40.4	179.1	374.2	413.3	170.0	21
4005	4005	LAKSHADWEEP	1904	0.0	0.0	13.5	13.2	143.3	261.3	256.0	38.9	21
4006	4006	LAKSHADWEEP	1905	62.4	0.0	0.0	0.0	166.7	400.7	68.7	377.5	10
4007	4007	LAKSHADWEEP	1906	17.8	0.0	24.4	33.8	213.0	465.0	348.6	260.5	2
...
4111	4111	LAKSHADWEEP	2011	5.1	2.8	3.1	85.9	107.2	153.6	350.2	254.0	25
4112	4112	LAKSHADWEEP	2012	19.2	0.1	1.6	76.8	21.2	327.0	231.5	381.2	17
4113	4113	LAKSHADWEEP	2013	26.2	34.4	37.5	5.3	88.3	426.2	296.4	154.4	18
4114	4114	LAKSHADWEEP	2014	53.2	16.1	4.4	14.9	57.4	244.1	116.1	466.1	13
4115	4115	LAKSHADWEEP	2015	2.2	0.5	3.7	87.1	133.1	296.6	257.5	146.4	16

103 rows × 20 columns

In [30]:

```
x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–Dec"])
x
```

Out [30]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
4002	1901	22.6	86.4	114.8	263.8	37.3	459.0	0.0	0.0	46.7	183.7	229.9	15.0
4003	1902	99.3	9.6	32.6	40.4	179.1	374.2	413.3	170.0	214.3	384.2	192.8	49.0
4005	1904	0.0	0.0	13.5	13.2	143.3	261.3	256.0	38.9	219.9	153.6	8.3	68.9
4006	1905	62.4	0.0	0.0	0.0	166.7	400.7	68.7	377.5	107.5	232.1	159.3	0.0
4007	1906	17.8	0.0	24.4	33.8	213.0	465.0	348.6	260.5	25.9	252.3	106.5	63.8
...
4111	2011	5.1	2.8	3.1	85.9	107.2	153.6	350.2	254.0	255.2	117.4	184.3	14.9
4112	2012	19.2	0.1	1.6	76.8	21.2	327.0	231.5	381.2	179.8	145.9	12.4	8.8
4113	2013	26.2	34.4	37.5	5.3	88.3	426.2	296.4	154.4	180.0	72.8	78.1	26.7
4114	2014	53.2	16.1	4.4	14.9	57.4	244.1	116.1	466.1	132.2	169.2	59.0	62.3
4115	2015	2.2	0.5	3.7	87.1	133.1	296.6	257.5	146.4	160.4	165.4	231.0	159.0

103 rows × 14 columns

In [31]:

```
y=x.drop(["YEAR","ANNUAL"],axis=1)  
y
```

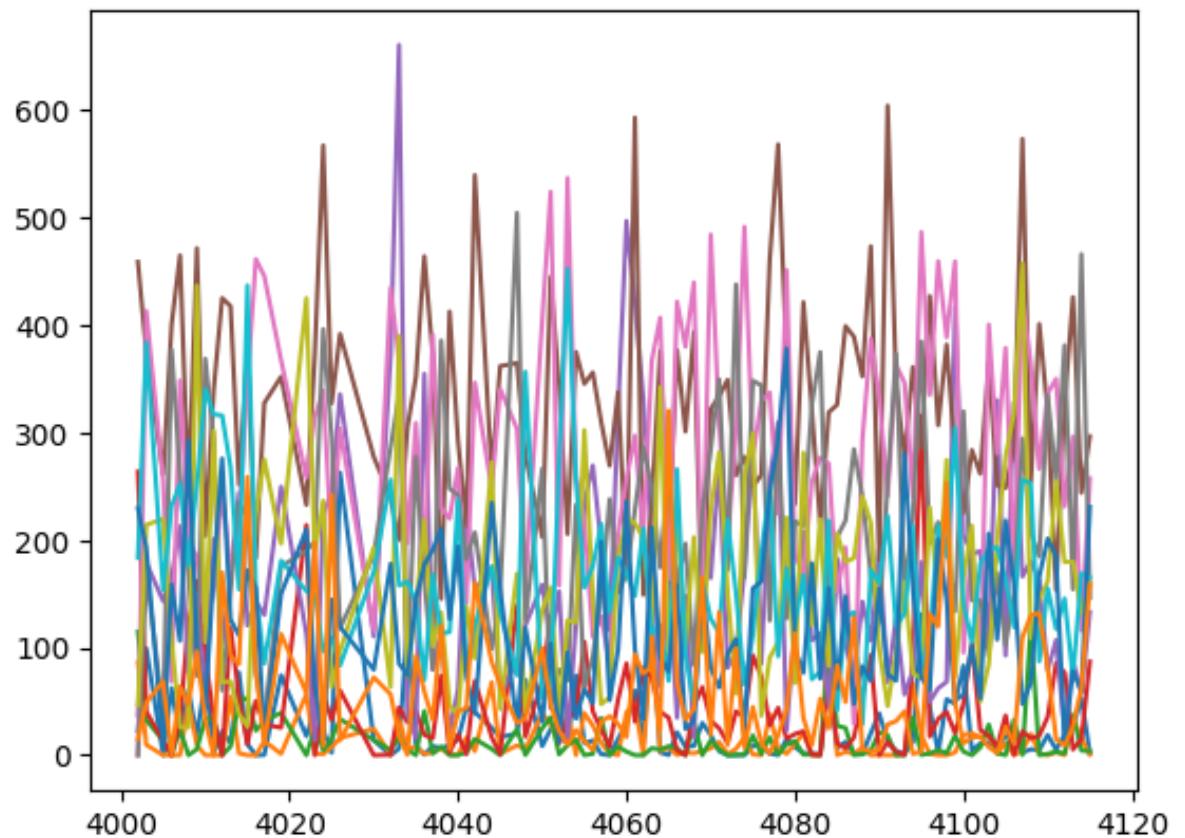
Out [31]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
4002	22.6	86.4	114.8	263.8	37.3	459.0	0.0	0.0	46.7	183.7	229.9	15.0
4003	99.3	9.6	32.6	40.4	179.1	374.2	413.3	170.0	214.3	384.2	192.8	49.0
4005	0.0	0.0	13.5	13.2	143.3	261.3	256.0	38.9	219.9	153.6	8.3	68.9
4006	62.4	0.0	0.0	0.0	166.7	400.7	68.7	377.5	107.5	232.1	159.3	0.0
4007	17.8	0.0	24.4	33.8	213.0	465.0	348.6	260.5	25.9	252.3	106.5	63.8
...
4111	5.1	2.8	3.1	85.9	107.2	153.6	350.2	254.0	255.2	117.4	184.3	14.9
4112	19.2	0.1	1.6	76.8	21.2	327.0	231.5	381.2	179.8	145.9	12.4	8.8
4113	26.2	34.4	37.5	5.3	88.3	426.2	296.4	154.4	180.0	72.8	78.1	26.7
4114	53.2	16.1	4.4	14.9	57.4	244.1	116.1	466.1	132.2	169.2	59.0	62.3
4115	2.2	0.5	3.7	87.1	133.1	296.6	257.5	146.4	160.4	165.4	231.0	159.0

103 rows × 12 columns

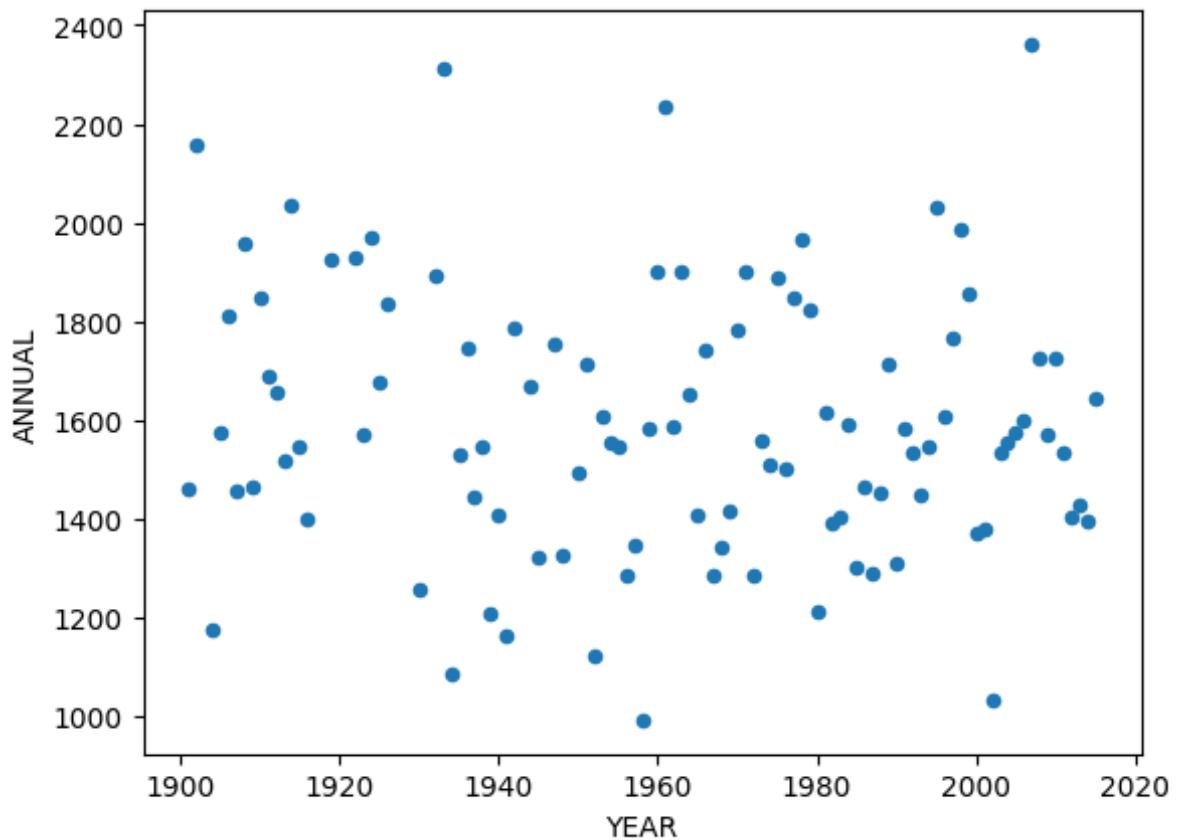
```
In [32]: plt.plot(y)
```

```
Out[32]: [<matplotlib.lines.Line2D at 0x1a457e46390>,
<matplotlib.lines.Line2D at 0x1a45a86cd10>,
<matplotlib.lines.Line2D at 0x1a45a86e910>,
<matplotlib.lines.Line2D at 0x1a45a86eb90>,
<matplotlib.lines.Line2D at 0x1a45a86ef10>,
<matplotlib.lines.Line2D at 0x1a45a86f310>,
<matplotlib.lines.Line2D at 0x1a45a86f750>,
<matplotlib.lines.Line2D at 0x1a45a86fb50>,
<matplotlib.lines.Line2D at 0x1a45a86f010>,
<matplotlib.lines.Line2D at 0x1a45a87c490>,
<matplotlib.lines.Line2D at 0x1a45a87c6d0>,
<matplotlib.lines.Line2D at 0x1a45a86cbd0>]
```



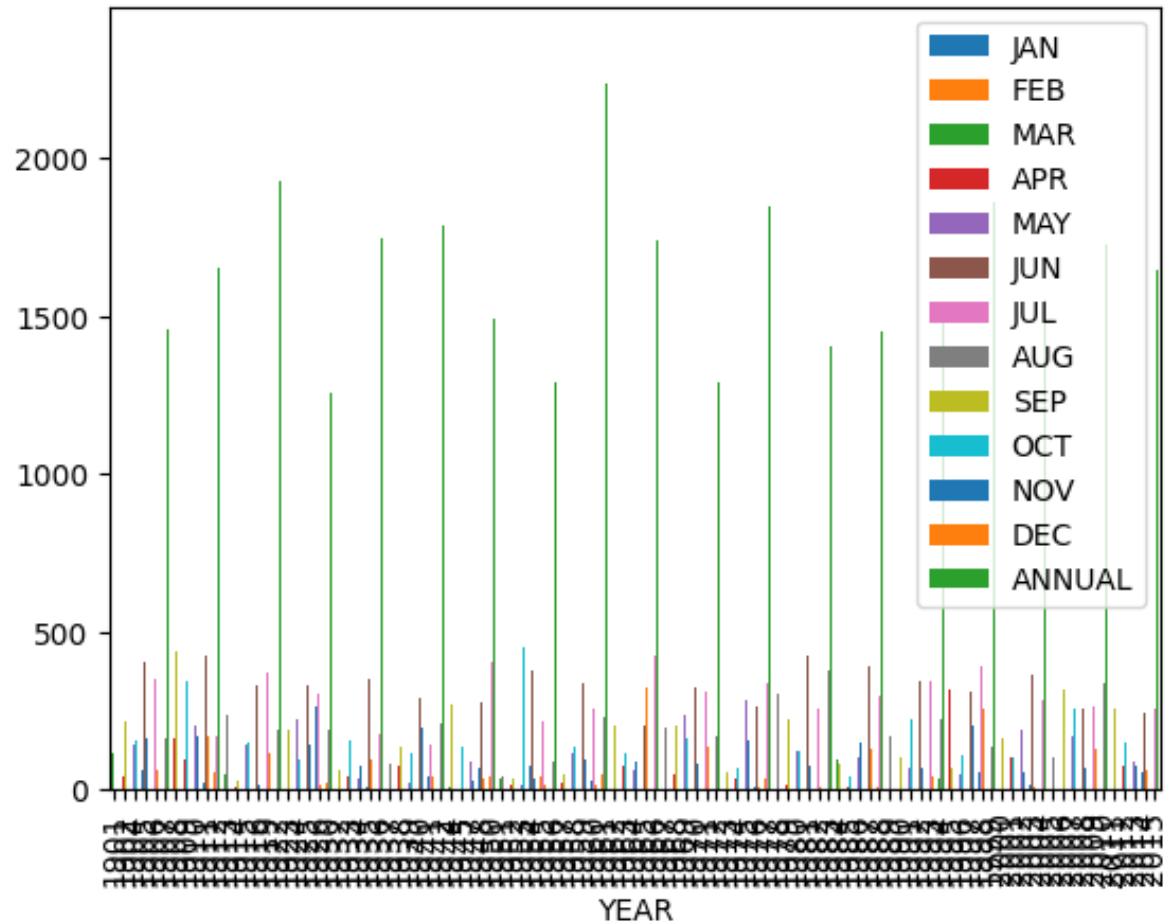
```
In [33]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

```
Out[33]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



In [34]: `x.plot.bar(x="YEAR")`

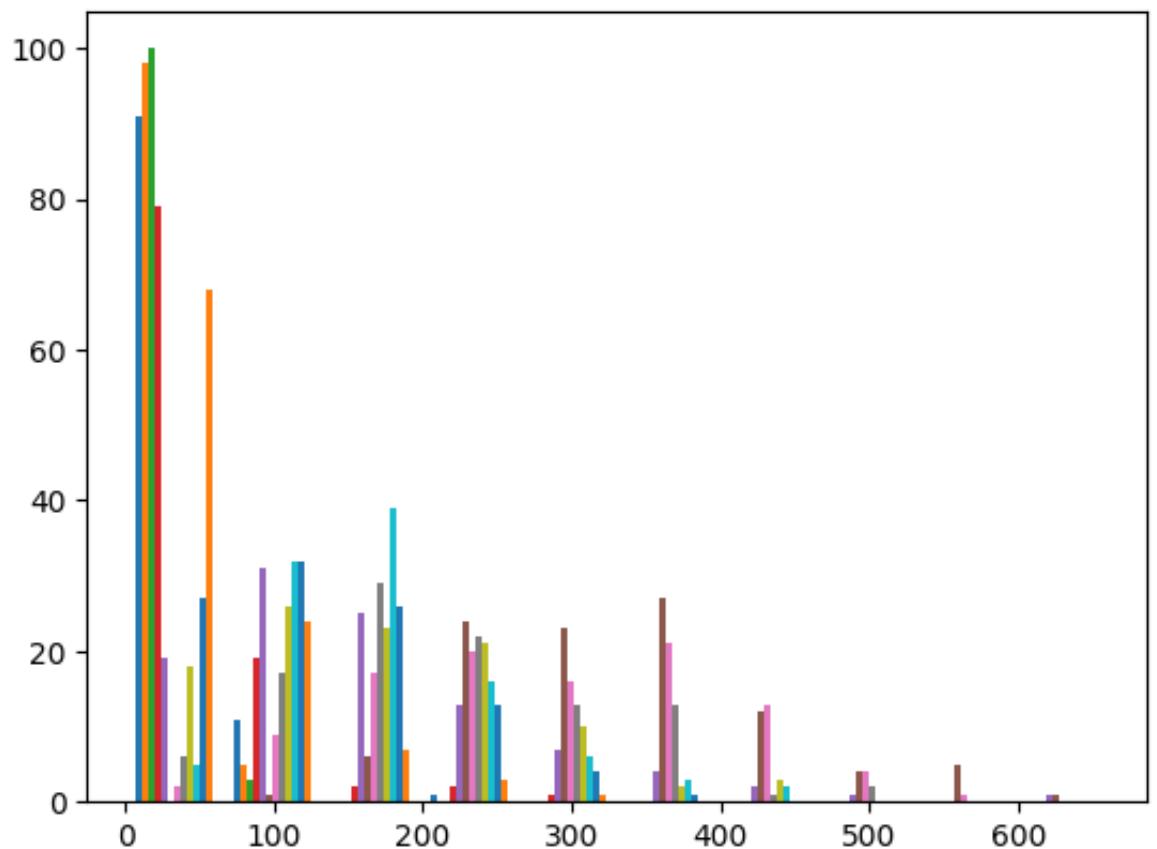
Out [34]: <Axes: xlabel='YEAR'>



In [35]: `plt.hist(y)`

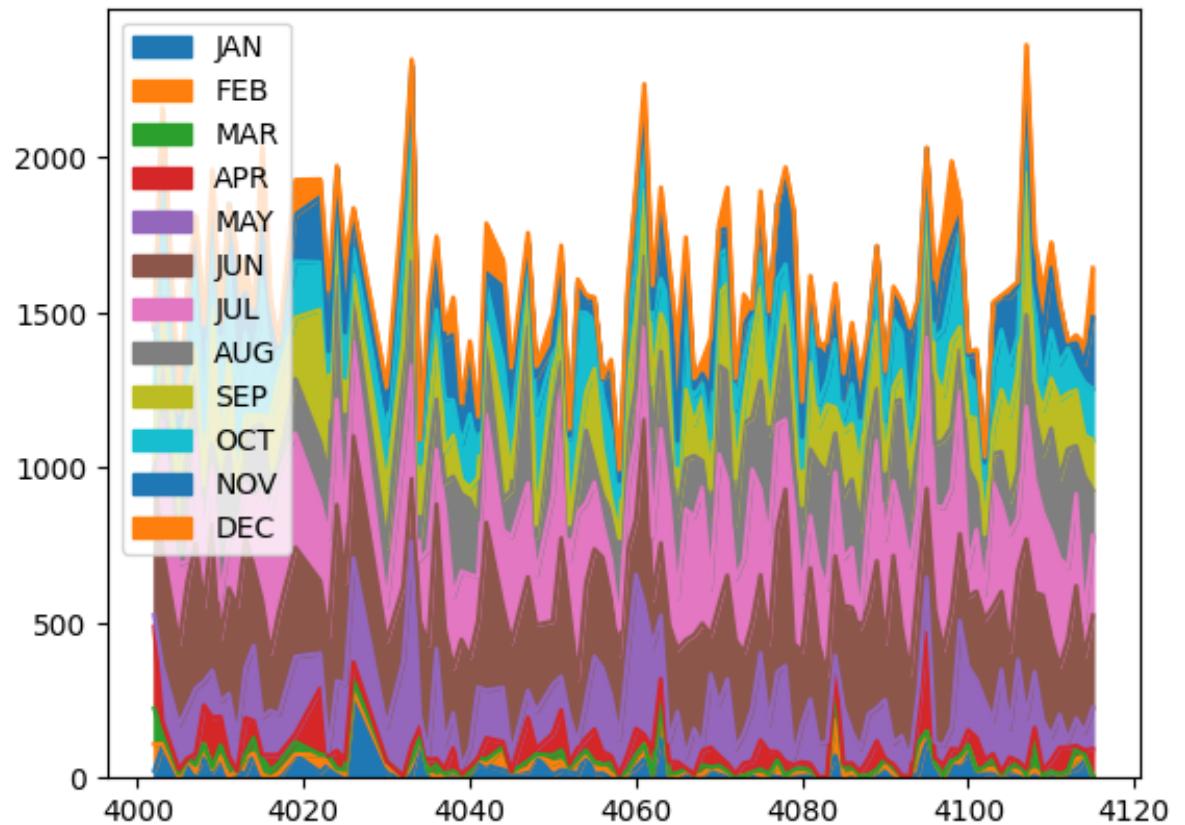
Out [35]: `(array([[91., 11., 0., 1., 0., 0., 0., 0., 0., 0.,
0.],
[98., 5., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[100., 3., 0., 0., 0., 0., 0., 0., 0., 0.,
0.],
[79., 19., 2., 2., 1., 0., 0., 0., 0., 0.,
0.],
[19., 31., 25., 13., 7., 4., 2., 1., 0., 0.,
1.],
[0., 1., 6., 24., 23., 27., 12., 4., 5., 0.,
1.],
[2., 9., 17., 20., 16., 21., 13., 4., 1., 0.,
0.],
[6., 17., 29., 22., 13., 13., 1., 2., 0., 0.,
0.],
[18., 26., 23., 21., 10., 2., 3., 0., 0., 0.,
0.],
[5., 32., 39., 16., 6., 3., 2., 0., 0., 0.,
0.],`

```
[ 27.,  32.,  26.,  13.,  4.,  1.,  0.,  0.,  0.,
0.],
[ 68.,  24.,   7.,   3.,   1.,   0.,   0.,   0.,
0.]),
array([  0. ,  66.08, 132.16, 198.24, 264.32, 330.4 , 396.48, 46
2.56,
      528.64, 594.72, 660.8 ]),
<a list of 12 BarContainer objects>)
```



In [36]: `y.plot.area()`

Out [36]: <Axes: >



In [37]: `x=df[df["SUBDIVISION"]=="ARUNACHAL PRADESH"]
x`

Out [37]:

	index	SUBDIVISION	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	...
112	112	ARUNACHAL PRADESH	1918	10.4	11.0	191.2	144.6	861.1	1609.9	1303.0	692.6	5
113	113	ARUNACHAL PRADESH	1919	34.5	67.8	28.5	256.9	420.6	973.6	999.0	286.7	6
114	114	ARUNACHAL PRADESH	1920	14.0	196.3	605.6	364.7	173.6	840.6	535.4	896.5	3
115	115	ARUNACHAL PRADESH	1921	78.9	54.3	180.3	358.0	598.0	1233.2	1433.0	885.9	6
116	116	ARUNACHAL PRADESH	1922	50.7	59.4	170.4	299.5	350.5	1109.3	918.7	488.3	2
...
202	202	ARUNACHAL PRADESH	2011	40.0	51.3	174.5	240.8	219.6	288.4	531.4	277.6	2
203	203	ARUNACHAL PRADESH	2012	57.8	35.8	134.2	403.4	187.4	645.8	638.9	316.0	7
204	204	ARUNACHAL PRADESH	2013	18.5	40.5	115.1	175.1	335.8	290.0	329.6	230.2	3
205	205	ARUNACHAL PRADESH	2014	19.0	101.9	80.3	86.7	299.0	415.8	392.4	599.6	3
206	206	ARUNACHAL PRADESH	2015	30.8	47.5	97.5	287.1	238.9	637.9	329.3	595.5	3

91 rows × 20 columns

In [38]: `x=x.drop(["SUBDIVISION","index","Jan–Feb","Mar–May","Jun–Sep","Oct–X`

Out [38]:

	YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
112	1918	10.4	11.0	191.2	144.6	861.1	1609.9	1303.0	692.6	515.8	125.2	7.8	13.7
113	1919	34.5	67.8	28.5	256.9	420.6	973.6	999.0	286.7	628.7	948.3	40.7	8.6
114	1920	14.0	196.3	605.6	364.7	173.6	840.6	535.4	896.5	376.7	103.3	0.0	0.0
115	1921	78.9	54.3	180.3	358.0	598.0	1233.2	1433.0	885.9	603.4	246.3	4.6	15.5
116	1922	50.7	59.4	170.4	299.5	350.5	1109.3	918.7	488.3	207.6	483.5	30.3	19.0
...
202	2011	40.0	51.3	174.5	240.8	219.6	288.4	531.4	277.6	286.7	51.9	16.2	15.2
203	2012	57.8	35.8	134.2	403.4	187.4	645.8	638.9	316.0	724.9	248.1	22.0	26.2
204	2013	18.5	40.5	115.1	175.1	335.8	290.0	329.6	230.2	316.1	164.1	13.3	14.6
205	2014	19.0	101.9	80.3	86.7	299.0	415.8	392.4	599.6	343.0	35.1	20.1	10.2
206	2015	30.8	47.5	97.5	287.1	238.9	637.9	329.3	595.5	374.2	65.2	33.8	29.8

91 rows × 14 columns

In [39]: `y=x.drop(["YEAR","ANNUAL"],axis=1)`
y

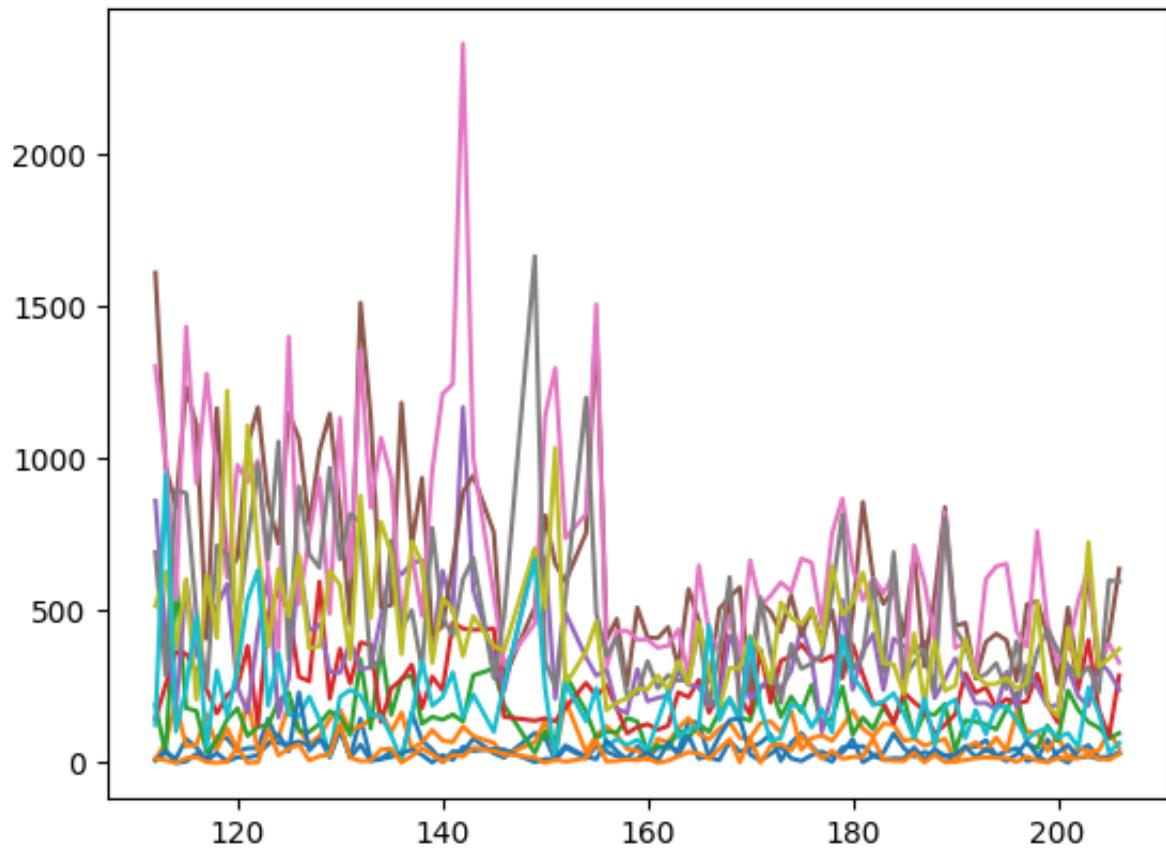
Out [39]:

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
112	10.4	11.0	191.2	144.6	861.1	1609.9	1303.0	692.6	515.8	125.2	7.8	13.7
113	34.5	67.8	28.5	256.9	420.6	973.6	999.0	286.7	628.7	948.3	40.7	8.6
114	14.0	196.3	605.6	364.7	173.6	840.6	535.4	896.5	376.7	103.3	0.0	0.0
115	78.9	54.3	180.3	358.0	598.0	1233.2	1433.0	885.9	603.4	246.3	4.6	15.5
116	50.7	59.4	170.4	299.5	350.5	1109.3	918.7	488.3	207.6	483.5	30.3	19.0
...
202	40.0	51.3	174.5	240.8	219.6	288.4	531.4	277.6	286.7	51.9	16.2	15.2
203	57.8	35.8	134.2	403.4	187.4	645.8	638.9	316.0	724.9	248.1	22.0	26.2
204	18.5	40.5	115.1	175.1	335.8	290.0	329.6	230.2	316.1	164.1	13.3	14.6
205	19.0	101.9	80.3	86.7	299.0	415.8	392.4	599.6	343.0	35.1	20.1	10.2
206	30.8	47.5	97.5	287.1	238.9	637.9	329.3	595.5	374.2	65.2	33.8	29.8

91 rows × 12 columns

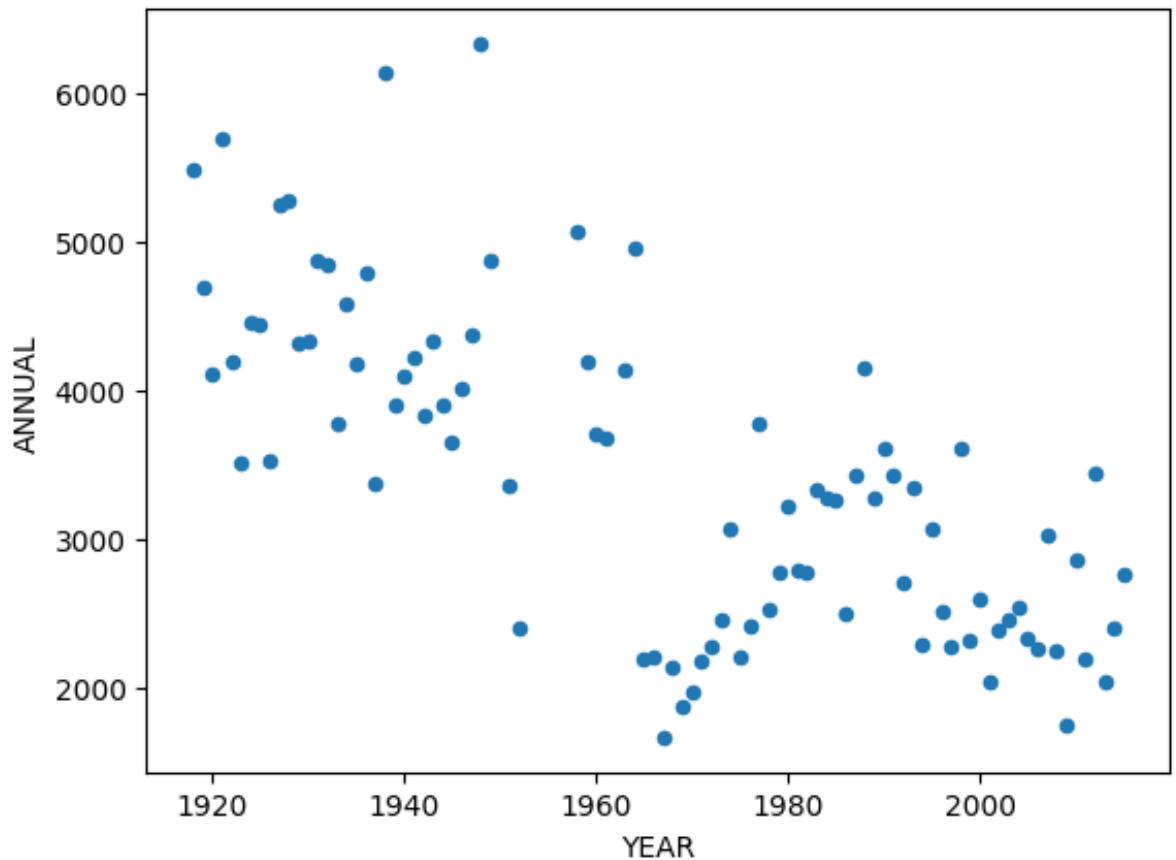
```
In [40]: plt.plot(y)
```

```
Out[40]: [<matplotlib.lines.Line2D at 0x1a45c459710>,
<matplotlib.lines.Line2D at 0x1a45c4a2ad0>,
<matplotlib.lines.Line2D at 0x1a45c4a2e10>,
<matplotlib.lines.Line2D at 0x1a45c4a3190>,
<matplotlib.lines.Line2D at 0x1a45c4a3490>,
<matplotlib.lines.Line2D at 0x1a45c4a3810>,
<matplotlib.lines.Line2D at 0x1a45c4a3dd0>,
<matplotlib.lines.Line2D at 0x1a45c4ac250>,
<matplotlib.lines.Line2D at 0x1a45c4a3410>,
<matplotlib.lines.Line2D at 0x1a45c4aca50>,
<matplotlib.lines.Line2D at 0x1a45c4acd0>,
<matplotlib.lines.Line2D at 0x1a45c6b5910>]
```



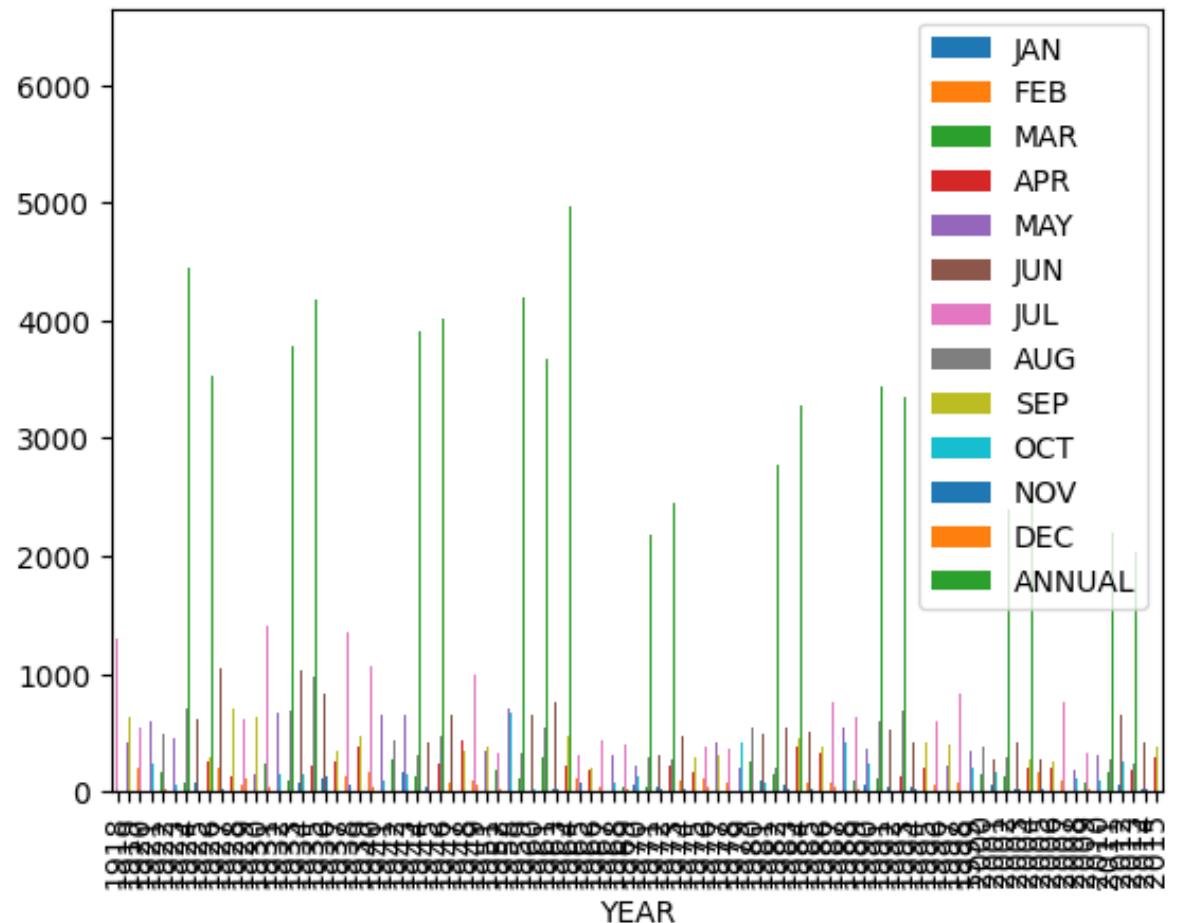
```
In [41]: x.plot.scatter(x="YEAR",y="ANNUAL")
```

```
Out[41]: <Axes: xlabel='YEAR', ylabel='ANNUAL'>
```



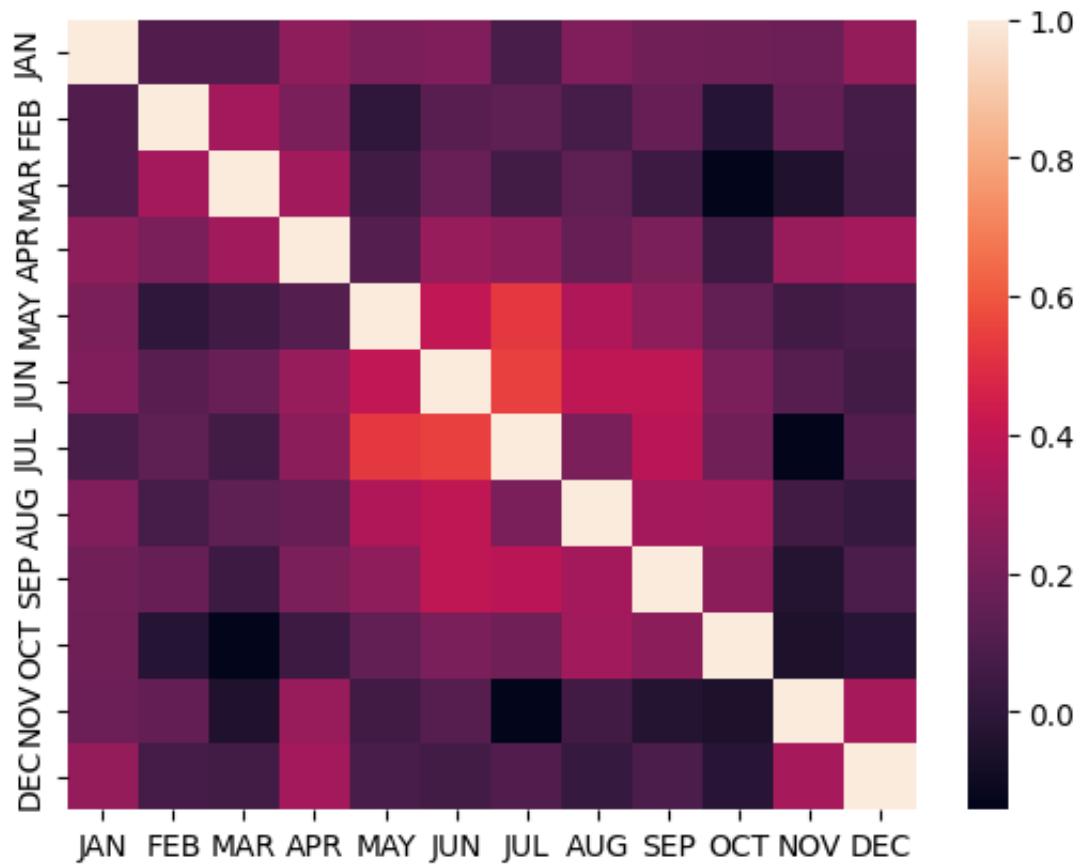
```
In [42]: x.plot.bar(x="YEAR")
```

```
Out[42]: <Axes: xlabel='YEAR'>
```



In [43]: `sns.heatmap(y.corr())`

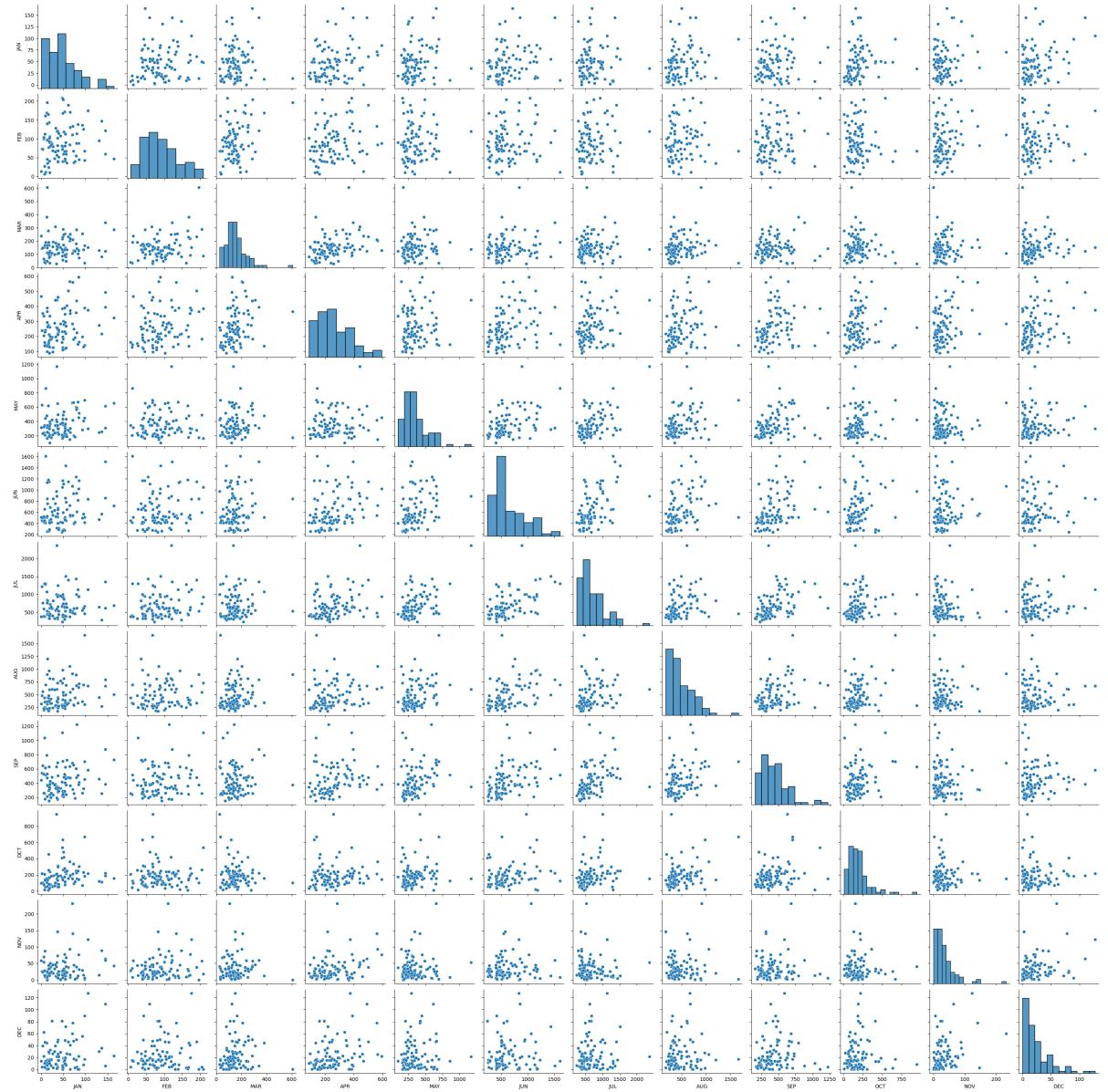
Out [43]: <Axes: >



In [44]: `sns.pairplot(y)`

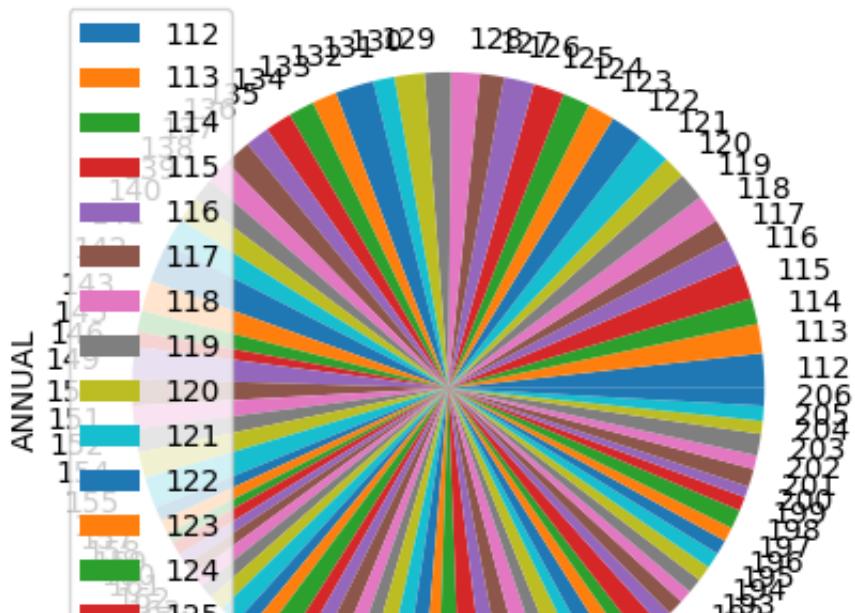
C:\Users\Gokul Jana\AppData\Local\Programs\Python\Python311\Lib\site-packages\seaborn\axisgrid.py:118: UserWarning: The figure layout has changed to tight
self._figure.tight_layout(*args, **kwargs)

Out [44]: <seaborn.axisgrid.PairGrid at 0x1a45a8047d0>



```
In [45]: x.plot.pie(y="ANNUAL", subplots=True)
```

```
Out[45]: array([<Axes: ylabel='ANNUAL'>], dtype=object)
```



```
In [ ]:
```