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

In [2]:
```
df=pd.read_csv("cleaned_rainfall")
df
```

Out[2]:

| | index | SUBDIVISION | YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **0** | 0 | ANDAMAN & NICOBAR ISLANDS | 1901 | 49.2 | 87.1 | 29.2 | 2.3 | 528.8 | 517.5 | 365.1 | 481.1 | 332.6 |
| **1** | 1 | ANDAMAN & NICOBAR ISLANDS | 1902 | 0.0 | 159.8 | 12.2 | 0.0 | 446.1 | 537.1 | 228.9 | 753.7 | 666.2 |
| **2** | 2 | ANDAMAN & NICOBAR ISLANDS | 1903 | 12.7 | 144.0 | 0.0 | 1.0 | 235.1 | 479.9 | 728.4 | 326.7 | 339.0 |
| **3** | 3 | ANDAMAN & NICOBAR ISLANDS | 1904 | 9.4 | 14.7 | 0.0 | 202.4 | 304.5 | 495.1 | 502.0 | 160.1 | 820.4 |
| **4** | 4 | ANDAMAN & NICOBAR ISLANDS | 1905 | 1.3 | 0.0 | 3.3 | 26.9 | 279.5 | 628.7 | 368.7 | 330.5 | 297.0 |
| **...** | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| **4111** | 4111 | LAKSHADWEEP | 2011 | 5.1 | 2.8 | 3.1 | 85.9 | 107.2 | 153.6 | 350.2 | 254.0 | 255.2 |
| **4112** | 4112 | LAKSHADWEEP | 2012 | 19.2 | 0.1 | 1.6 | 76.8 | 21.2 | 327.0 | 231.5 | 381.2 | 179.8 |
| **4113** | 4113 | LAKSHADWEEP | 2013 | 26.2 | 34.4 | 37.5 | 5.3 | 88.3 | 426.2 | 296.4 | 154.4 | 180.0 |
| **4114** | 4114 | LAKSHADWEEP | 2014 | 53.2 | 16.1 | 4.4 | 14.9 | 57.4 | 244.1 | 116.1 | 466.1 | 132.2 |
| **4115** | 4115 | LAKSHADWEEP | 2015 | 2.2 | 0.5 | 3.7 | 87.1 | 133.1 | 296.6 | 257.5 | 146.4 | 160.4 |

4116 rows × 20 columns

In [3]:
```
df["SUBDIVISION"].value_counts()
```

Out[3]:
```
SUB HIMALAYAN WEST BENGAL & SIKKIM    115
MADHYA MAHARASHTRA                    115
BIHAR                                 115
GANGETIC WEST BENGAL                  115
MATATHWADA                            115
TELANGANA                             115
ASSAM & MEGHALAYA                     115
HIMACHAL PRADESH                      115
NORTH INTERIOR KARNATAKA              115
GUJARAT REGION                        115
NAGA MANI MIZO TRIPURA                115
COASTAL ANDHRA PRADESH                115
SAURASHTRA & KUTCH                    115
CHHATTISGARH                          115
WEST UTTAR PRADESH                    115
JHARKHAND                             115
KERALA                                115
KONKAN & GOA                          115
ORISSA                                115
VIDARBHA                              115
EAST MADHYA PRADESH                   115
COASTAL KARNATAKA                     115
WEST MADHYA PRADESH                   115
HARYANA DELHI & CHANDIGARH            115
WEST RAJASTHAN                        115
TAMIL NADU                            115
JAMMU & KASHMIR                       115
RAYALSEEMA                            115
EAST UTTAR PRADESH                    115
SOUTH INTERIOR KARNATAKA              115
EAST RAJASTHAN                        115
PUNJAB                                115
UTTARAKHAND                           115
LAKSHADWEEP                           114
ANDAMAN & NICOBAR ISLANDS             110
ARUNACHAL PRADESH                      97
Name: SUBDIVISION, dtype: int64
```

# KERALA

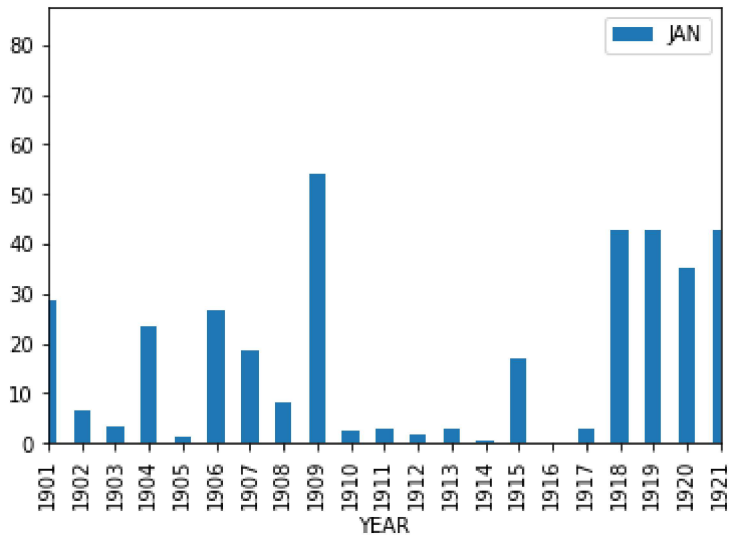
In [4]:
```
dat1=df[df["SUBDIVISION"]=="KERALA"]
dat1
```

Out[4]:

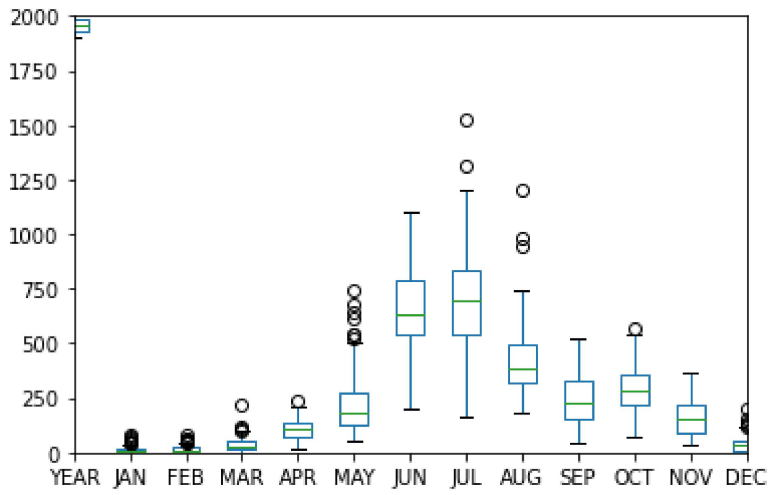
| | index | SUBDIVISION | YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **3887** | 3887 | KERALA | 1901 | 28.7 | 44.7 | 51.6 | 160.0 | 174.7 | 824.6 | 743.0 | 357.5 | 197.7 | 2 |
| **3888** | 3888 | KERALA | 1902 | 6.7 | 2.6 | 57.3 | 83.9 | 134.5 | 390.9 | 1205.0 | 315.8 | 491.6 | 3 |
| **3889** | 3889 | KERALA | 1903 | 3.2 | 18.6 | 3.1 | 83.6 | 249.7 | 558.6 | 1022.5 | 420.2 | 341.8 | 3 |
| **3890** | 3890 | KERALA | 1904 | 23.7 | 3.0 | 32.2 | 71.5 | 235.7 | 1098.2 | 725.5 | 351.8 | 222.7 | 3 |
| **3891** | 3891 | KERALA | 1905 | 1.2 | 22.3 | 9.4 | 105.9 | 263.3 | 850.2 | 520.5 | 293.6 | 217.2 | 3 |
| **...** | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| **3997** | 3997 | KERALA | 2011 | 20.5 | 45.7 | 24.1 | 165.2 | 124.2 | 788.5 | 536.8 | 492.7 | 391.2 | 2 |
| **3998** | 3998 | KERALA | 2012 | 7.4 | 11.0 | 21.0 | 171.1 | 95.3 | 430.3 | 362.6 | 501.6 | 241.1 | 1 |
| **3999** | 3999 | KERALA | 2013 | 3.9 | 40.1 | 49.9 | 49.3 | 119.3 | 1042.7 | 830.2 | 369.7 | 318.6 | 2 |
| **4000** | 4000 | KERALA | 2014 | 4.6 | 10.3 | 17.9 | 95.7 | 251.0 | 454.4 | 677.8 | 733.9 | 298.8 | 3 |
| **4001** | 4001 | KERALA | 2015 | 3.1 | 5.8 | 50.1 | 214.1 | 201.8 | 563.6 | 406.0 | 252.2 | 292.9 | 3 |

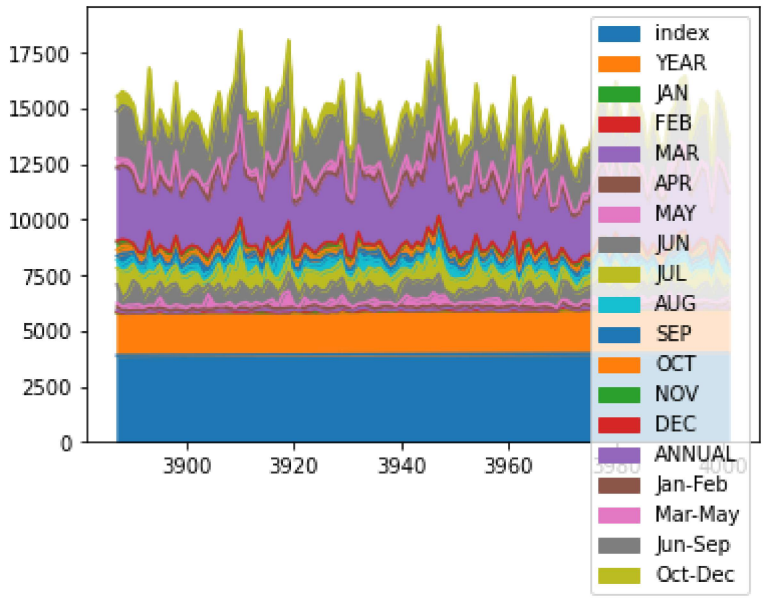
115 rows × 20 columns

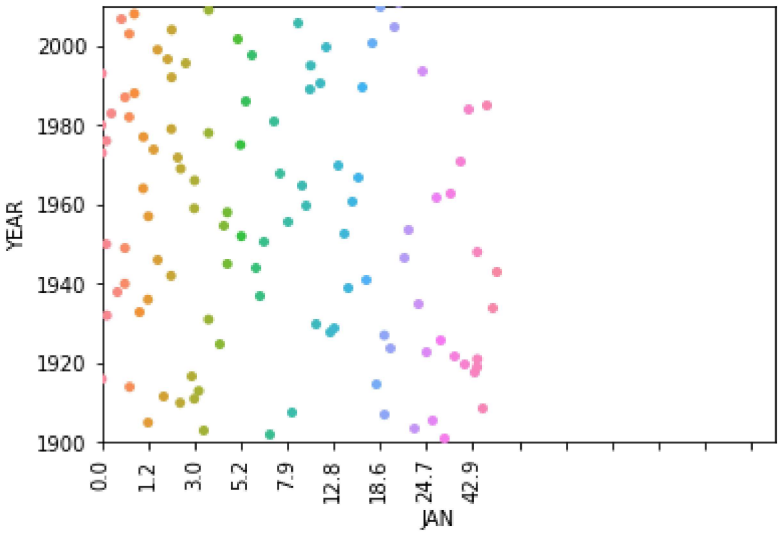
In [5]:
```
dat1.plot.bar("YEAR","JAN")
plt.xlim(0,20)
plt.figure(figsize=(60,30))
plt.show()
dat1.plot.box()
plt.xlim(2,14)
plt.ylim(0,2000)
plt.show()
dat1.plot.area()
dat1.plot.scatter("YEAR","JAN")
sns.stripplot(x=dat1["JAN"],y=dat1["YEAR"],jitter=True)
plt.ylim(1900,2010)
plt.xlim(0,145)
plt.xticks(dat1["JAN"],rotation="vertical")
plt.gca().xaxis.set_major_locator(tic.MultipleLocator(base=10))
plt.show()
dat1.plot.hist()
```



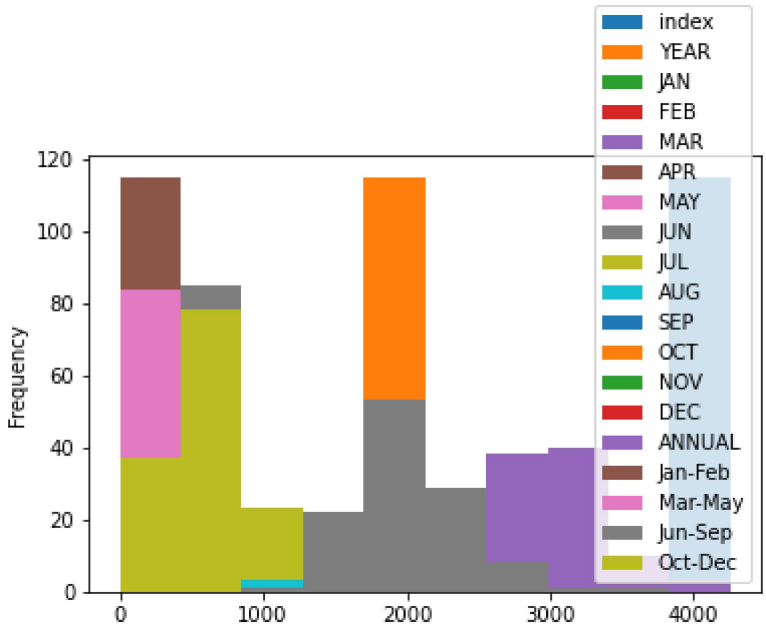

```
<Figure size 4320x2160 with 0 Axes>
```



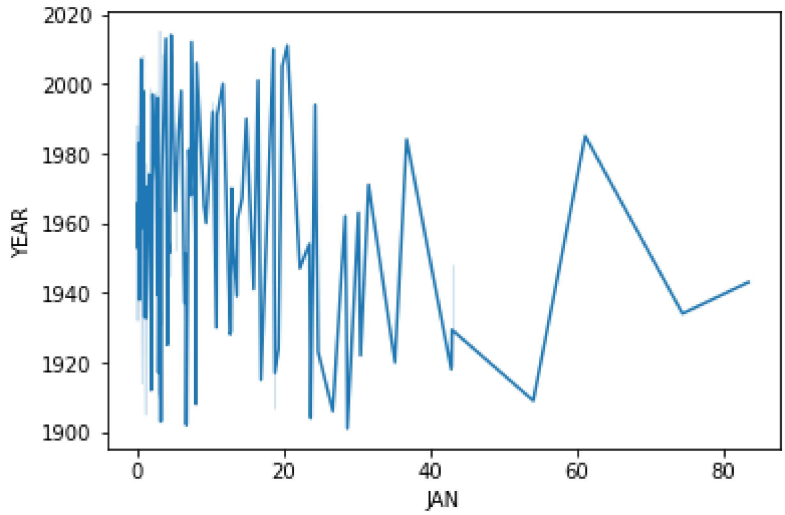



Out[5]: <AxesSubplot:ylabel='Frequency'>



In [6]:
```
sns.lineplot(x=dat1["JAN"],y=dat1["YEAR"])
plt.show()
```




# SOUTH INTERIOR KARNATAKA

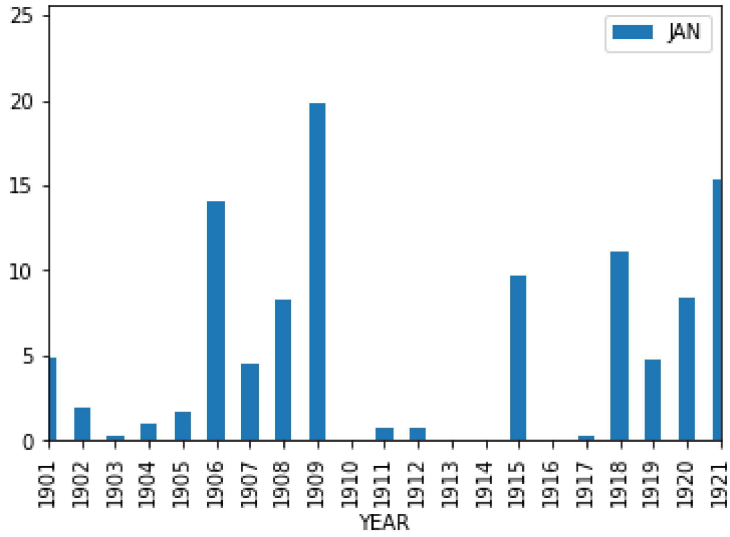
In [7]:
```
dat2=df[df["SUBDIVISION"]=="SOUTH INTERIOR KARNATAKA"]
dat2
```

Out[7]:

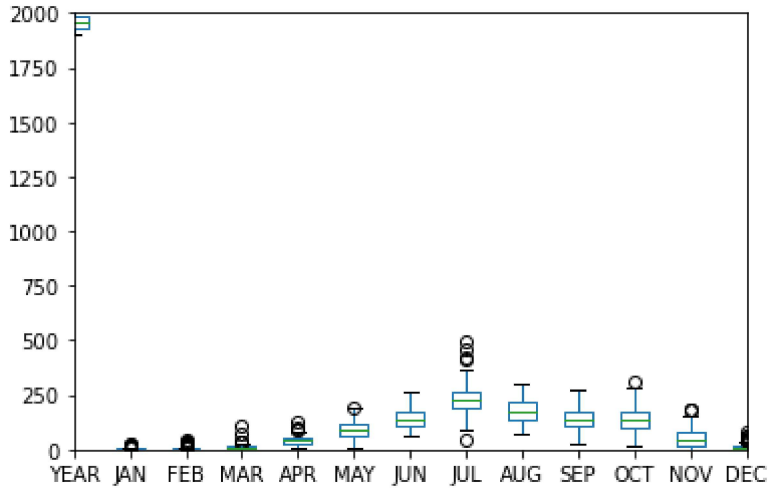
| | index | SUBDIVISION | YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **3772** | 3772 | SOUTH INTERIOR KARNATAKA | 1901 | 4.9 | 31.8 | 3.0 | 32.7 | 109.6 | 106.0 | 210.0 | 109.2 | 140.8 | 170 |
| **3773** | 3773 | SOUTH INTERIOR KARNATAKA | 1902 | 1.9 | 0.5 | 6.7 | 42.6 | 97.7 | 91.7 | 210.0 | 82.1 | 138.4 | 219 |
| **3774** | 3774 | SOUTH INTERIOR KARNATAKA | 1903 | 0.3 | 0.0 | 1.1 | 11.6 | 125.1 | 129.7 | 284.4 | 155.7 | 197.1 | 154 |
| **3775** | 3775 | SOUTH INTERIOR KARNATAKA | 1904 | 1.0 | 0.5 | 5.2 | 43.5 | 144.7 | 167.9 | 197.1 | 73.2 | 89.6 | 120 |
| **3776** | 3776 | SOUTH INTERIOR KARNATAKA | 1905 | 1.7 | 7.9 | 14.2 | 23.6 | 118.6 | 95.9 | 148.4 | 140.6 | 43.1 | 142 |
| **...** | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| **3882** | 3882 | SOUTH INTERIOR KARNATAKA | 2011 | 2.1 | 12.4 | 12.4 | 80.2 | 83.5 | 177.1 | 202.4 | 199.5 | 111.2 | 144 |
| **3883** | 3883 | SOUTH INTERIOR KARNATAKA | 2012 | 4.6 | 5.5 | 8.1 | 99.0 | 45.6 | 81.8 | 144.7 | 236.5 | 100.6 | 62 |
| **3884** | 3884 | SOUTH INTERIOR KARNATAKA | 2013 | 0.5 | 10.1 | 11.7 | 34.6 | 95.6 | 176.2 | 307.4 | 151.7 | 191.8 | 103 |
| **3885** | 3885 | SOUTH INTERIOR KARNATAKA | 2014 | 0.4 | 2.4 | 17.7 | 46.7 | 130.5 | 106.8 | 271.6 | 254.6 | 161.6 | 152 |
| **3886** | 3886 | SOUTH INTERIOR KARNATAKA | 2015 | 1.7 | 0.2 | 24.4 | 80.5 | 125.3 | 218.7 | 112.0 | 136.6 | 164.5 | 106 |

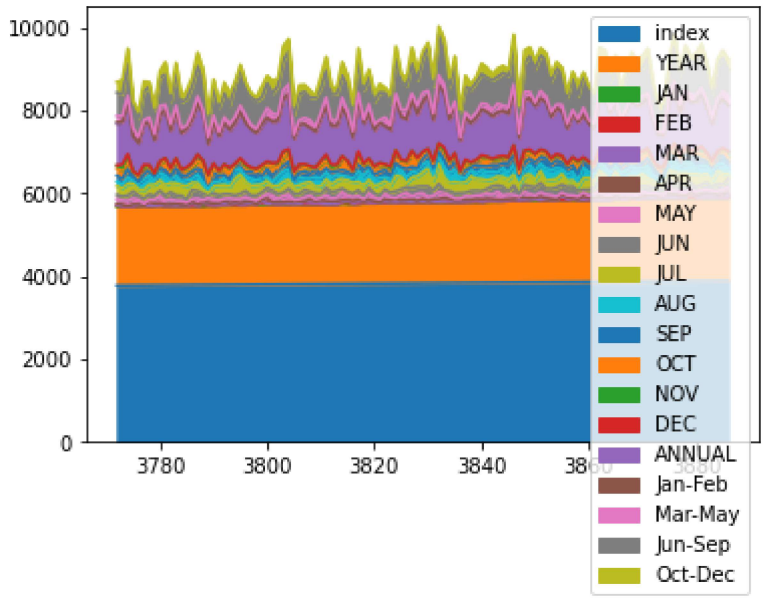
115 rows × 20 columns

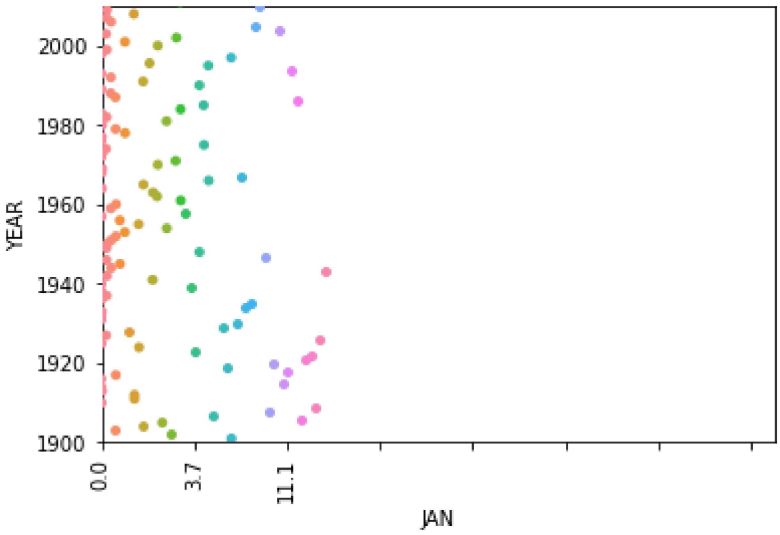
In [8]:
```
dat2.plot.bar("YEAR","JAN")
plt.xlim(0,20)
plt.figure(figsize=(60,30))
plt.show()
dat2.plot.box()
plt.xlim(2,14)
plt.ylim(0,2000)
plt.show()
dat2.plot.area()
dat2.plot.scatter("YEAR","JAN")
sns.stripplot(x=dat2["JAN"],y=dat2["YEAR"],jitter=True)
plt.ylim(1900,2010)
plt.xlim(0,145)
plt.xticks(dat2["JAN"],rotation="vertical")
plt.gca().xaxis.set_major_locator(tic.MultipleLocator(base=20))
plt.show()
dat2.plot.hist()
plt.show()
```

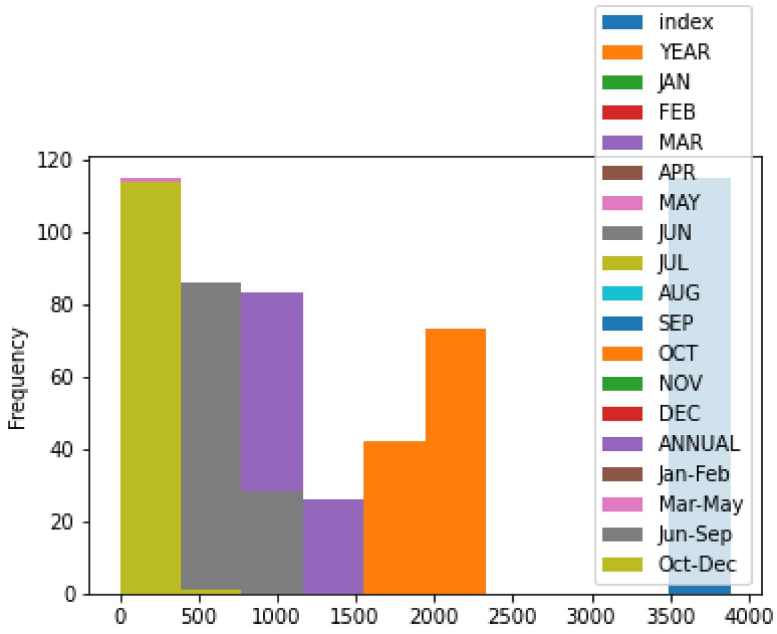



```
<Figure size 4320x2160 with 0 Axes>
```




10000
8000
6000
4000
2000
0
3780
3800
3820
3840
index
YEAR
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
ANNUAL
Jan-Feb
Mar-May
Jun-Sep
Oct-Dec


2000
1980
1960
1940
1920
1900
YEAR
0.0
3.7
11.1
JAN


120
100
80
60
40
20
0
Frequency
0
500
1000
1500
2000
2500
3000
3500
4000
index
YEAR
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
ANNUAL
Jan-Feb
Mar-May
Jun-Sep
Oct-Dec

In [9]:
```
sns.lineplot(x=dat2["JAN"],y=dat2["YEAR"])
plt.show()
```